

COMPUTERWORLD

WILL MICROSOFT CATCH NETSCAPE?



Owens Corning's Charles Whitford and Arvin Industries' Don Moore battle it out. See in Depth, page 60

WHAT'S INSIDE

- At Internet World, Microsoft, IBM and Novell will announce plans to stitch the Java Internet programming language into their desktop operating systems before the year is out. See story, page 6, by Frank Hayes. More show highlights, page 12.
- Microsoft and Netscape confirm plans to follow rival Spyglass' lead in slicing off pieces of their Web browsers from the core product. See story, page 6, by Kim S. Nash.
- Interact '96, the first virtual conference, met with some pretty hairy start-up obstacles, but garnered some kudos as a pioneering effort. See stories, page 8, by Melissa Bane and IS manager Brian Jaffe.

Web on privacy alert

Online telephone list raises hackles, putting IS on notice

By Mitch Wagner

Information systems managers who build business sites on the Internet are beginning to trip privacy alarms, and it's forcing them to start thinking about ethical issues that, until now, they've been able to blissfully ignore. Yahoo, Inc. and Database America Co. last week triggered just such an alert over a new service that links the names, addresses and telephone numbers of 90 million people nationwide.

Troublesome results

The problem? The database, Yahoo People Search at <http://www.yahoo.com/search/people>, included unlisted phone numbers and addresses for people such as police officers, judges and prosecutors who feared their lives would be in danger if malefactors found out where they lived.

The resulting hue and cry last Wednesday forced Database America, which owns the list, to delete information about people whose phone

numbers are unlisted in phone company white pages. That move was spurred by complaints from worried law enforcement officials.

And privacy issues will be heightened further when Netscape Communications Corp. includes a button linking to white page services in the next version of its Navigator browser, due out by June.

At issue are privacy concerns raised by the Internet, where information that has always been publicly available but difficult to find is now shipped into people's living rooms on their PCs.

"Online, there's a heightened concern about privacy. The public has taken the option that online usage

Privacy alert, page 16

Cisco spends big to cover all bases

By Bob Wallace

When the soft-spoken, West Virginian-born and educated John Chambers addresses crowds, he often prefaces his comments with an apology for his accent.

But the Cisco CEO's actions speak much louder than his words.

Last week's stunning \$4 billion bid for SprintCom, Inc. would result in one of the largest computer industry mergers ever. With that move, Cisco Systems, Inc. stepped up its remarkable campaign to evolve from a maker of nothing but routers to a broadly located provider of one-stop shopping for all networking needs.

That goal has led the San Jose, Calif.-based company on a three-year, nine-company acquisition spree that will have cost it \$5 billion by the time the leaves turn in the Mountain State.

Cisco, page 105

Alcoa cans SAP R/3, rolls over to Oracle

By Julia King

Alcoa, a \$13 billion industrial Goliath, is scrapping SAP AG's R/3 software in favor of Oracle Corp.'s client/server applications world-wide. *Computerworld* has learned.

The \$100 million-plus project involves rolling out Oracle's suite of client/server financial and manufacturing software to 60,000 users at 120 Aluminimum Company of America locations in 27 countries.

The deal is the latest in an impressive string of big scores for the Redwood Shores, Calif., company. Its enterprise customer base also includes Xerox Corp. in Rochester, N.Y., and Kellogg Co. in Battle Creek, Mich. Like Alcoa, those companies are standardizing on Oracle

applications.

SAP's R/3 system is the most significant of many being ripped out by Alcoa, whose 22 business units have independently purchased and implemented a mixed bag of systems since 1991. Prior to this contract, Al-

Alcoa, page 16

Mobil revamp devastates IS

By Joseph Maglitta
FAIRFAX, VA

As part of a restructuring aimed at slashing more than \$1 billion per year, Mobil Corp. is asking its information systems department to lead cost-saving ventures into electronic commerce while reducing its ranks by nearly half.

The \$74 billion petroleum giant plans to cut IS staffing from 2,500 to 1,600 by August. Many left April 5, as a host of Internet and electronic data interchange projects raced ahead.

The nation's second-largest oil company has quietly installed a new IS chief, restructured most IS services and reorganized electronic data interchange, Internet, groupware and legacy electron-

Mobil, page 70



Roger L. Trout, Mobil's EDN manager, says he expects more than 1,000 employees to use EDN to do business with the company by December



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Compiled by Mitch Betts

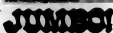
- At trade shows, 70% of the visitors turn right from the main entrance.
- For every \$1 cut from formal PC training and support, \$2 is spent on "underground support" at the user level.
- About 20% of computer passwords can be guessed using a "dictionary attack." (Hackers use programs that try to match a password with words in the dictionary, reverse spellings and common names.)
- Customers don't care about your organizational chart. They care about responsiveness and cost.
- In most cases, 20% of a systems project's features will provide 80% of user benefits. Concentrate on that 20%.
- Almost 80% of the time spent on data warehousing projects is spent extracting, cleaning and loading the data.



Shenton has been clocked at more than 200 words per minute. He uses an ergonomic keyboard and a fluid keyboard technique that makes him look as though he's playing the piano.

Michael Shenton, the world champion of error-free speed typing, has added a new world record. On April 2 at Baruch College in New York, the Russian journalist entered the numbers 1 to 800 without a mistake in 5 minutes. His typing reaches speeds of up to 16 keystrokes per second. The achievement was certified for inclusion in the *Guinness Book of World Records*. Shenton's previous record of 795 hadn't been broken since 1993. Why test with numbers? "You can argue about words and their length, but numbers are the same in the world today. That is the new standard for speed [typing]," says Norris McWhirter, founding editor of the *Guinness Book*.

Newsbytes



computer games, too. Employees at Lacent, Ciccocioppo, Dun & Bradstreet, IBM and J. P. Morgan are among the most active at downloading computer games. Says Will Marguloff, director of national sales at Jumbo: "TC Chopfitt," a 3-D helicopter game in which players destroy opposing tanks and save hostages, is most in demand.

"Digital Hug" is the Internet's answer to the store-bought Mother's Day card. Point your browser at <http://www.worldvillage.com/mother.htm> to select a card from six designs. Enter in an electronic form your name, your mother's name, your heartfelt message and — here's the hard part — your mother's E-mail address.

Send contributions of offbeat news, bits and anecdotes to mbetts@cw.com.

COMPUTERWORLD APRIL 29, 1996 (<http://www.computerworld.com>)



Need to see your faxes while you're on the road? The Fax-View personal fax reader, from Reflection Technology in Waltham, Mass., is a palm-size, paperless fax machine that costs \$499. A built-in "virtual display" lets users see a full 12-in. fax page, even though the image is really the size of a postage stamp. FaxView connects to cellular telephones and standard phone lines.

Digital Frontiers

Historians for years have worried about how future generations will read important computerized records that are stored in defunct formats.

Now, some long-range thinkers are worried about the ephemeral nature of information on World Wide Web pages. As a headline in *The New York Times* put it, "Can the Web be a time capsule if no one is saving the data?" No one argues that the ultimate home pages should be saved for posterity. But as the Web becomes a venue for electronic commerce and politics, there may be something worth keeping.

To get started, a tiny nonprofit group called Internet Archive (<http://www.archive.org>) has joined the Smithsonian Institution's National Museum of American History to record this year's presidential campaign as it appears on the Web.

"The goal is to provide a [permanent, searchable] memory for otherwise perishable resources," says Brewster Kahle, the archive's president and founder. He says the repository — which may amount to several terabytes of data — will be moved to new media and operating systems as time goes by.

— Mitch Betts

Itold of the week

Large companies annually spend an average of \$4,100 per user to acquire, deploy, manage and use electronic mail. But messaging systems downtime costs those companies \$684 per user in lost productivity and revenue. Reducing downtime by 10 hours a year would save the companies \$177 per user.

Source: Creative Networks Inc., Palo Alto, Calif.

News shorts

Do you believe Inmagic? Inmagic, Inc., a database company in Woburn, Mass., plans to ship by July a utility designed to index and manage data stored on intranets, according to a source close to the company.

The vendor will embed "spidering" technology from search engine maker Lycos, Inc. in DB/Text NavigationServer. The new package "crawls" through documents and databases attached to intranets to find, catalog and index information in them.

Users could search for specific data; webmasters could see a map of available intranet information.

DB/Text NavigationServer will cost \$15,000. It runs on Windows NT.



3Com unwraps ATM uplinks 3Com Corp. this week will announce products that will let users tie their switches and routers to Asynchronous Transfer Mode (ATM) backbone networks.

Key among the product introductions are 155M bit/sec. ATM uplinks for 3Com's LANtastic 2500 LAN switch and the vendor's high-end NetBuilder II routers.

The LANplex 2500 switch can break up bandwidth bottlenecks by providing up to 16 switched Ethernet ports.

The ATM uplink will complete the client/server picture by offering the high-speed pipe for backbone networks or centralized servers.

The other uplink will let users tie four- and eight-channel routers to ATM campus networks. On the down side, the announcement won't include a long-awaited ATM uplink for 3Com's high-end LANplex 6000 data center switch.

For more News shorts, see page 8

This week in



Whistleblower Survey

John E. Woburn, MD, Wilson to discuss how recent legislation could affect your operations.

QuickPoll

Will the Internet be Microsoft's undoing? Cast your vote at <http://www.computerworld.com>.

Internet '96

The first virtual trade show left attendees eyeing and grumpy — the same as they would be at most-world conferences. Coverage includes first-person accounts.

<http://www.computerworld.com>



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OS vendors place Java support on 1996 menu

By Frank Hayes

As Java ports across the desktops of corporate development shops, operating system vendors are left scrambling to bundle in Java support by year's end.

That's good news for users who want their last Java programs, and fast.

Java time: Sun's Java will be embedded into most desktop operating systems by the end of the year.



Microsoft Corp., IBM and Novell, Inc. plan to announce at this week's Internet World in San Jose, Calif., that forthcoming versions of their operating systems can run applications written in Sun Microsystems, Inc.'s Java Internet development language.

Portable attraction

"Now I'll be able to run a Java program on my desktop — just like [Microsoft's] Visual Basic — but it's way more portable," said John Gawkowski, a Java software architect at printing giant R. R. Donnelley and Sons Co. in Chicago. "Java is going to be much more attrac-

tive as a programming language."

Java was designed to allow the same program to run on any computer, regardless of its hardware or operating system. But that flexibility comes at a price: Java programs run slower than conventional applications. They currently require special add-on software such as World Wide Web

time" Java compiler into the next revision of Windows 95 that will convert Java software to native Windows applications on the fly. That version will ship by year's end, sources said.

IBM will add Java to the next version of OS/2, code-named Merlin and slated to ship this fall. In October, IBM will also ship a Java add-on for Windows 3.1. • Novell will support Java on servers using its NetWare network operating system.

Apple going for license

Missing from the roster of major desktop vendors is Apple Computer, Inc., which is negotiating with Sun's JavaSoft subsidiary for a license, sources at Sun said.

The general consensus is that operating systems support for Java will let applications read and write files and perform other functions that aren't available to Java applets running on a Web browser such as Netscape Communications Corp.'s Navigator 2.0.

As a result, more people will be able to use Java, said Jim Whitely, a principal at New Logic, Inc., a Chicago-based Java developer. "If you don't need anything special to run Java applications, you can get a lot more sophisticated."

— Senior editor Laura DiDio contributed to this story.

browsers to run.

Users expect that to change when Java becomes part of the operating system. "Anytime you embed a key piece of functionality into the core operating system, you get a performance boost," said Dan Schaffner, senior system programmer at Shostek Container Corp., a paper manufacturer in Chicago.

Microsoft, IBM and Novell wouldn't comment on this week's announcements. But according to sources close to the companies, the following is expected to happen:

• Microsoft will build a "just-in-

When will the new language madness stop? See page 52.

OS/2 SmartSuite set to ship in fall

But Lotus won't update all applications until end of year

By Lisa Picarilli

Lotus Development Corp. announced last week that it will begin shipping the OS/2 version of SmartSuite by September.

But new versions of three of the suite's five applications won't be ready until year's end.

The suite will initially ship with existing versions of Lotus 1-2-3 spreadsheet, the Approach database and the Organizer personal information manager, plus new releases of WordPro and Freelance Graphics.

Our analyst said it was unclear how many of the 13 million OS/2 users will buy the new version of SmartSuite when it becomes available, but a lack of competi-

tion guarantees healthy sales.

"There are no other OS/2 suites offered by competitors, and the OS/2 market is fairly large, so I expect a lot of [purchasing] activity by the big IBM accounts using OS/2," said Amy Wohl, editor of "Trends Letter," an industry newsletter in Warhock, Pa.

However, one user at a large OS/2 site disagreed.

"Lotus is too late to the party. It's exacerbating and exacerbating for them to put out an OS/2 product so long after their Windows 95 products have been out," said Cory Seif, vice president of applied technology at Huntington Bancshares Inc. in Columbus, Ohio, which has thousands of OS/2 licenses. "So I am thourging of

give them the same level of importance that they gave to getting the OS/2 version out."

The Windows 95 version of SmartSuite came out in November but still lags far behind rival Microsoft Corp.'s best-selling Office for Windows 95, which has more than 70% of the Windows suites market share.

Seif said the lack of competitive software offerings for the platform is exactly what is driving him away from OS/2 and toward Windows 95 and Windows NT.

"I have given up the battle," he said. "IBM would have to make a compelling case for us to do much more with OS/2. I'm fed up and tired of being a second-class software applications citizen."

Just browsing

These Internet browsers will announce the following products:

MICROSOFT

- This week ■ 16-bit Windows version of Internet Explorer to ship
- May ■ Internet Explorer 3.0 to start beta-testing
- Summer ■ Internet Explorer 3.0 to ship

NETSCAPE

- This week ■ Formal announcement of Navigator 3.0
- End of May ■ Navigator 3.0 to ship

ORACLE

- This week ■ PowerBrowser 1.0 to ship
- May ■ PowerBrowser 1.5 to ship
- By end of year ■ PowerBrowser 2.0 to ship

SYNOPSIS

- June ■ Web Technology Kit to ship

Web browser makers follow modular trend

By Kim S. Nash

Breaking up isn't hard to do.

At least that's what Web browser makers Microsoft Corp. and Netscape Communications Corp. are hoping.

The vendors confirmed last week that they plan to follow rival Synopsys, Inc. and carve off pieces of their World Wide Web browsers from the core products. The idea is to give users the option to bypass unwanted features to keep the browsers as small as possible.

"That's the direction everyone's heading," said Alex Edelstein, a group product manager at Netscape in Mountain View, Calif.

Netscape has been criticized for fattening up its browser by adding features that users may not want, such as electronic mail and support for audio and video. Naperville, Ill.-based Synopsys, meanwhile, recently split its browser into dozens of smaller components that users can elect to use [CW, April 15].

Microsoft, too, is headed toward a piecemeal approach for its Internet Explorer browser. But rather than divide the product into modules, it plans to sprinkle browser features in its operating systems and applications, said Kevin Usinagat, a product manager at Microsoft in Redmond, Wash.

"We have no plans to discontinue [anything], a separate browser, but many features will be lightweight and optional," Usinagat said.

Usenet news-readers and E-mail, for example, will be discrete options in future versions of Internet Explorer, he added.

Oracle Corp., meanwhile, plans to market its PowerBrowser product as a slower-moving alternative to Navigator and Internet Explorer. It is due to ship this week.

Oracle announced PowerBrowser six months ago and recently touted its longer release cycle as a benefit to users. "A lot of our customers saying they can't deploy corporate applications on a browser [with new versions] that ships every six weeks," said Doug Laird, director of marketing at Oracle in Redwood Shores, Calif.

Faster than an overpriced... Netscape and Microsoft average three to six months between browser upgrades, which is lightning speed compared with shipping schedules of traditional applications. The last pace could make it tough for information systems groups to keep up.

For example, Navigator 3.0, which is code-named Alvin, is due to ship at the end of May — roughly five months after Navigator 2.0 was released.

However, Edelstein said, Netscape's subscription program is intended to relieve IS angst. IS managers can buy a two-year subscription to Navigator that gives them rights to all product versions shipped during that time.

Although some users who posted to various Usenet forums related to Web products said they are concerned about frequent browser revisions, others aren't.

"We will roll out new versions if we like the features they come with," said John Swartzentruber, a technical manager at Eli Lilly & Co. in Indianapolis.

PC price cuts keep on coming

By Bob Francis

Look for the "blue light special" at a PC vendor near you.

A series of upcoming price cuts can be expected during the next several weeks as PC hardware vendors pass on price reductions from their suppliers.

First out of the box is Dell Computer Corp. in Austin, Texas, which will announce cuts of up to 34% on its servers this week. That slashes the price tag on one Dell server from \$7,165 to \$4,749.

IBM PC Co. also plans to pass along recent price cuts in memory chips to users, company officials said. Compaq Computer Corp. in Houston confirmed it will do much the same as it passes along lower prices from its chip, memory and storage suppliers.

For users, the price cuts will mean more bang for the buck. But corporate budget pressures will keep many users from going on a high-quantity buying spree.

"It'll be a relief for our budget, but we all still make do with less each year," said Ray Schwartz, MIS manager at The Blackstone Group, an investment firm in New York.

The PC price cuts are tied to three developments: Intel Corp.'s decision to cut prices on its lineup of microprocessors; steep price cuts in memory chips since November; and lower prices from disk drive manufacturers as they move to larger disk capacities.

The falling PC prices come at a time when PC vendors plan to introduce Intel

Pentium Pro systems designed for mainstream corporate users.

"Intel doesn't want users to be confused between Pentium and Pentium Pro, so Pentium prices are going to be dropping to make way for the higher-end chips," said a PC vendor briefed by Intel.

Intel plans to announce a high-end 200-MHz Pentium Pro chip next month, along with price cuts on its other Pentium Pro chips. With the cuts, Pentium Pro desktop systems will cost about \$3,800, and prices for high-end Pentium systems will start at around \$2,500.

While Intel price cuts have become de rigueur in the PC industry, the combination of price drops in disk drives and memory creates a unique situation.

"It's really all three that have allowed us to cut, in some cases, up to 34% off the prices of our servers," said Dean Kline, a Dell spokesman.

Another factor is that Dell has an aging server line that will be replaced by year's end, analysts noted.

Standardization key to containing costs

By Thomas Hoffman
RANCHO MIRAGE, CALIF.

To contain costs and keep a handle on the "mishmash" of technologies thrown at them, information systems executives must standardize and force end users to adapt.

So said Colin Crook, senior technology officer at Citicorp, who launched a standardization effort at the New York-based bank earlier this year. Crook served as the keynote speaker at last week's Executive Technology Summit '96, a gathering of 225 IS executives here.

Standardization "is a traumatic experience for the business [users], who are used to saying, 'This is what we do, and this [technology] is what we want,'" he said.

Other conference attendees acknowledged that they have had trouble getting end users to buy into standardization. "How do you tell a broker who's making \$100 million for the company each year that he's got to use this PC or that network?" asked Tim Tokarsky, a vice president at Merrill Lynch & Co. in New York.

Tokarsky has used a "sell" approach to get Merrill Lynch end users to go for the IS group's standardization efforts. "It's been pretty effective for us," he added.

FOR UPSTREAM

"FDR/Upstream is the highest rated mainframe-based package, coming first (of the mainframe-based packages) for six of the eight criteria in the survey, including first for overall satisfaction. Mainframe-based packages were, as a group, rated more favourably than server-based packages for all eight criteria, and they also appear to account for much of the growth in this sector of the market (last year roughly one in ten packages were running on the mainframe, compared with roughly one in three this year)."

Xephon, December 1995

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Cyberconference chaos

Slow connections bog down Interact '96

IS manager finds little to rave about

By Melissa Bane

Attendees at last week's Interact '96, the first virtual technology conference, stubbed their surfboards on some pretty hairy start-up obstacles.

"There certainly were some technological malfeas," said Steve Franco, an analyst at The Yankee Group in Boston, not a session moderator at Interact '96. "But as a bleeding-edge application, I think it was a very positive experience."

The chat sessions were easy to access, but the video, audio, three-dimensional and virtual reality exhibit areas required that users download programs from a software "tool box" containing up to 13 applications. Some of these programs, such as VDOLive video software from VDOnet Corp., can't be accessed through a firewall.

Virtual gate

Because of this, show sponsor Stratus Computer, Inc. developed an open chat software package to give attendees basic participation privileges. By the end of the second day, about 7,500 users had passed through the virtual confer-

ence entrance hall, which was designed in Virtual Reality Modeling Language.

The show's Internet backbone had no bandwidth restrictions, but users complained their connection speeds weren't fast enough to keep up with the chat sessions or necessary downloading of tool box items.

And the exposition was continually plagued by "server overload" error messages.

Overly long and complex registration was another obstacle for some users. On Day 1 only 25% of the 3,500 who had accessed the registration page bothered to follow through.

Program director Francois Goinseaux acknowledged the technical complications but said glitches are inevitable when dealing with technology as new as the Internet.

"This is life in the open systems world," Goinseaux said. "I think considering that less than a year and a half ago Netscape wasn't even out yet, this show isn't so bad."

 Interact won't replace Comdex anytime soon. See page 36.

Does attending a trade show online stack up to actually being at one? To find out, Computerworld asked Brian D. Jaffe, a client services manager at a Fortune 100 company in New York, to "attend" Interact '96. His report follows:

April 12: I try to register, using Netscape's Navigator 2.0 under Windows 95. It runs on a Pentium PC, accessing the Internet via a T1 link. I get various error messages — not terribly

different from faxing a registration and getting a busy signal. But at least I can set a fax machine for redial. Online, I have to recomplete the form every time I restart Navigator.

April 14: From home, I use my CompuServe account, with a 14.4K bit/sec. modem on a 486SX PC with Windows 3.1, and finally register. It takes 25 minutes, and the registration process triggers nine junk E-mails, two of which crash my electronic-mail system when I open them.

April 23: I enter the show immediately, with none of the delays of a physical show. But I need to re-enter my ID and password as I move from area to area.



Brian D. Jaffe takes a break from cybernavigating at Interact '96

The site is full of graphics and hot links, but I feel lost without a high-level map. The moderated conference called "Office 2000" too long to wait for the text to appear.

April 24: I get to the office early to take advantage of the light Internet traffic and the T1 connection. I jump between chat rooms labeled "Platinum Technologies," "Netscape," and "Microsoft," but they could all be called "Teen Talk." The attendees choose aliases such as Buzbabo and Sgt. Pepper and leave messages such as "Anyone out there?" and "When does this start?"

I attend a conference on "Integrating ATM in the Legacy LAN Environment," but technical problems keep the speaker from seeing anyone else's postings. I try

"The Virtual Community" conference, but I don't have time to download, install and learn the required 3M-byte Virtual Reality Modeling Language viewer.

I arrive late to the "Brand Equity in Cyberspace" conference, but I can scroll back and see everything said so far, an advantage over a physical show. The discussion seems lively, but response time is still too slow. I think about coming back later, printing the session and reading it on paper.

Later that day: If this were a real show, I'd be catching an early flight home. Making time in the office to log on for events seems harder than blocking out an entire day for a physical show. I've learned nothing from the vendor "exhibits" but have a better sense of what can be done on the World Wide Web.

News Shorts

Hacker Mitnick pleads guilty to federal charges

Computer hacker Kevin D. Mitnick last week pleaded guilty to federal computer fraud charges. The 32-year-old faces up to 20 years in prison for using stolen cellular telephone numbers to illegally access computer databases. He also pleaded guilty to violating probation for the 1988 break-in of Digital Equipment Corp. computers. Federal prosecutors say they are still investigating the case and may bring additional charges. Sentencing will be July 15.

Oracle ships 'net apps

Oracle Corp. this week will begin shipping three new applications designed to work over the Internet or a corporate intranet. The products are Web Customers, Web Suppliers and Web Employees, all of which come with integrated workflow capabilities. The World Wide Web-based applications, which are built to run on top of Oracle's Release 10SC client/server applications, cost \$25,000 per server.

Digital speeds workstations

Digital next week will ship two additions to its Digital XL Personal Workstation family — the Alpha XL 300 and 366 — based on its high-speed 300- and 366-MHz Alpha chips. The systems will top the XL family and include performance-enhanc-

ing features such as a 128-bit memory bus, a 32-bit Peripheral Component Interconnect I/O bus and Fast SCSI drives. Prices start at \$8,495.

CC-Mail upgrade delivered

Lotus Development Corp. will announce the availability of its CC-Mail 6.0 upgrade at the Electronic Messaging Association conference this week in Anaheim, Calif. The package offers group calendaring and scheduling, support for electronic forms and continuous availability, which means there is no downtime even during maintenance operations.

SGI profits take a tumble

Silicon Graphics, Inc. (SGI) said its net income fell 22% to \$53 million in its third quarter ended March 31. This compares

with earnings of \$68 million in the same quarter last year. Quarterly revenue increased 17% to \$677 million, up from \$577 million in the year-ago period. The company blamed the drop in earnings on its failure to meet demand for new products. The company also predicted it will bounce back next quarter with the help of a 34% increase in orders during its third quarter.

PC slowdown skips Compaq

Compaq Computer Corp. in Houston, related fears of a PC industry slowdown by posting better-than-expected first-quarter results. Compaq earned profits of \$234 million on sales of \$4.21 billion, compared with profits of \$216 million on sales of \$2.96 billion for the same period last year. Compaq officials attributed the sales gains to price cuts meant to clear out inventory.

IBM plans commerce server

At Interact World this week in San Jose, Calif., IBM will announce plans for a Java-enabled electronic commerce server based on its DB2 database. Called Net.Commerce Server, the software uses DB2 data to dynamically build Web pages and is targeted at applications such as ticketing and

catalog sales. It already is being used to sell tickets to the upcoming Summer Olympics in Atlanta. It will ship in the second half of the year.

UnixWare support grows

Six vendors of Unix servers based on Intel Corp. microprocessors last week announced plans to gradually move away from their own Unix implementations and standardize on the SCO UnixWare operating system developed by SCO, Inc. These vendors include Data General Corp., NCR Corp., Unisys Corp., Ing. C. Olivetti, ICL and Siemens/Nixdorf Informationssysteme AG. Sequent Computer Systems, Inc. is also considering the shift.

SHORT TAKES Canada: Communications Corp. spent \$145 million, or \$5.8 million per employee, on its Westford, Mass., neighbor, Aris Networks, Inc. Aris is developing remote access technology... Unisys Corp. shareholders rejected a proposal by a New York investment firm to break up its computer systems, customer services and consulting divisions into separate companies... The Cambridge, Mass.-based Westminster Gold plans to launch a West Coast chapter this week. The first meeting will be Wednesday at the Technomart in Santa Clara, Calif.

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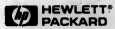
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High-flying Baan hopes to avoid growing pains

By Julia King
ORLANDO, FLA.

Baan Co. last week sailed through its first-ever user conference on a pink cloud of record-breaking sales and a 100% increase in its U.S. customer base.

The question now is how long the Dutch vendor can sustain such growth without straining customer support.

"Some people may be afraid we're growing too fast," said Jan Baan, the company's chairman and founder.

Among those people is a systems inte-

grator who is implementing the vendor's client/server software at a California electronics firm. "There is already very definitely a shortage of Baan expertise" in the U.S., he said.

"Three years ago, we could have had our meeting on a small bus on the way from the

airport," noted Fred Vidican, president of Baan World Users. He is also director of strategic systems planning at Noranda, Inc. in Toronto.

Last week, by contrast, more than 1,200 people turned out at the conference here, where Baan announced its latest software release, Baan IV (CW, April 22).

Baan's growth in the U.S. is reminiscent of SAP AG's fast and fabled rise to the top of the packaged software market. What Baan wants to avoid are the same kind of support gaps caused by SAP's early success.

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Baan formally announces its Tifon applications in the U.S. The company's U.S. customer base comprises eight companies.

1994

Baan outbids SAP AG to win a \$20 million software contract from The Boeing Co. It reports annual revenue of \$122 million.

1995

Baan goes public at \$46 a share, adds 500 new customers and reports annual revenue of \$216 million.

1996

U.S. sales grow to one-third of Baan's revenue. First-quarter revenue increases 100%. Baan stock trades near \$60 a share. First-ever Baan user conference draws more than 1,200 people.

Baan is taking several steps to avoid becoming a casualty of its own success, officials said. These include narrowly focusing on the automotive, electronics, and pulp and paper industries. The vendor is also targeting large project-oriented companies that make one-of-a-kind, engineered-to-order products, such as electric power plants.

Baan has enlisted at least a dozen partners to implement its software and customize the applications for its targeted industries. These include IPMG Peat Marwick in the electronics arena and Ernst & Young in the automotive business.

Officials at Ernst & Young said they are bracing for the inevitable increase in demand for Baan expertise by adding 125 more Baan experts to the company's current staff of two.

Baan last year added 500 new customers to its worldwide base of 1,700. It expects to grow by 150% next year. Moreover, U.S. users now account for one-third of sales, compared with less than 8% in 1993.

 Lawson unveils its client/server financial software. See page A7.

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IBM wraps 'net apps into AIX

Version 4.2 debuts

By Craig Stedman
NASHVILLE

IBM plans to bundle increasing amounts of software with its AIX operating system to make life easier for users of the company's RS/6000 Unix servers.

The bundling effort is getting under way in a new version of AIX that was introduced last week. Version 4.2 comes with a variety of Internet and multimedia software, including Sun Microsystems, Inc.'s Java programming language and World Wide Web server and browser products from Netscape Communications Corp.

More Internet technologies, such as firewalls and Hypertext Markup Language editors and authoring tools, will be integrated with AIX as add-ons during the second half of the year, said officials at IBM's Technical Interchange '96 developers conference.

Beyond that, IBM is looking at creating packaged RS/6000s that would preconfigure AIX with its new software servers for database

es, transaction monitors, Notes and other products.

Having tighter integration than roll-your-own Unix servers now provide "would ensure that I'm going to get a clean environment that works smoothly," said Bill Laher, a senior systems programmer at Smith & Nephew-Richards, Inc. in Memphis. The number of thalopic implants, in building an RS/6000-based data warehouse.

Earlier upgrades

More integrated packaging should also reduce the time and expense needed to install and upgrade servers, Laher said. It can take an entire weekend to set up one RS/6000, whereas Smith & Nephew-Richards recently upgraded AS/400 machines in one weekend, he added.

The firm uses Oracle Corp.'s database rather than IBM's DB2. Tighter ties between DB2 and AIX might lead it to consider a switch, "but that's not something that's going to be based on a possible future," said Laher, who attended a closed session on AIX discussions here. "We'd have to see something concrete."



AIX Version 4.2 includes a PC-like desktop client that costs \$400. The entry-level price of the operating system previously was \$900.

Leslie Kinghorn, bureau chief for LAN administration at the Idaho State Controller's Office in Boise, said putting a server together internally provides opportunities to customize and tweak the system. "But there could be a cost justification if you could just bring it in and start running," she added. The controller's office uses an RS/6000 to connect other state agencies to its mainframe and is looking at installing Notes on one of the servers.

Internet software is the main focus of IBM's bundling plans for AIX now, said Jeffrey Jig, AIX architect at the company's RS/6000 Division in Austin, Texas. "But ob-

viously we're evaluating a bunch of stuff, not only with just the software [servers] but on the hardware side," he added.

AIX Version 4.2, which is due to ship May 17, includes a Java implementation plus products such as Netscape's Navigator and Commerce Server software and IBM's Internet connection server and multimedia tools. The Internet software comes free. IBM considers it to be part of the core operating system, although it ships on a separate CD-ROM.

Microsoft Data Systems unveils its first CMOS System390. See page 43.

Users to IBM: Follow through

Good start, now let's see the follow-through.

That was the message IBM got from users and independent software vendors who attended its Technical Interchange '96 developers conference last week. IBM drew plaudits for its balanced effort to target a range of multiple-term software strategies. But doubts persisted about the vendor's ability to live beyond the hype. IBM buyers who made up the audience.

"Last year, IBM was talking about improving their other platforms," such as Windows NT, said John Rowe, an application consultant at Washington State University's Computing Services Center in Pullman, Wash. "This year, it seems like they've delivered a lot of the things they said they would."

Worshipping Microsoft? But after several other questions, Rowe said he still questions whether IBM has the marketing muscle to take on the likes of Microsoft Corp. in distributed software. "We're impressed with Microsoft, while IBM is somewhat as aggressive as they could be," he said.

Ben Hughes, director of management information systems at ProMile, Inc., a retailer in Jackson, Miss., said IBM is finally showing some positive movement on the desktop with the Notes software it bought last year. "IBM has to do something to stay active in desktop applications," he said. "Microsoft was way in the lead, and IBM needs to counteract."

Glen Carlo Blosse, general manager of software marketing at IBM, conceded that the company is still trying to shake past mistakes. "We acknowledge that we have low credibility" as a client-server software vendor, he said during a speech here. Blosse didn't promise a quick fix but said improvements should occur "week to week, month to month."

—Craig Stedman and Michael Goldsberg

Users turning to big guys for Internet wares

By Mitch Wagner

As corporate users move beyond Internet "brochureware" to sophisticated integration of the Internet with their internal information systems, IS managers are turning to more mature vendors to handle the job.

That is a big change from a year or two ago, when most Internet software came from bohemian start-ups and college campuses. At this week's Internet World in San Jose, Calif., major software vendors such as IBM, Microsoft Corp., Hewlett-Packard Co. and Novell, Inc. will try to ride the trend toward bottom-line respectability by announcing Internet products.

In addition to interoperability between the Internet and other IS technologies, the big vendors of for one-stop shops for technology and services on and off the Net. Doing business with companies that have broad technology bases offers greater stability, users said.

With established vendors, "you have more assurance that if you implement a technology, it's not going to go away in six months," said Kelly Frey, director of business development at the Copyright Clearance Center in Danvers, Mass.

IS managers are taking a decidedly pragmatic approach to the Internet. "I'm a lot more impressed by something that lets me put my PowerPoint presentations out there dynamically than I am by an animated jackhammer sound that comes from Java," said Carl Leubsdorf Jr., an applications specialist at Calvert Group Ltd., an investment company in Bethesda, Md. "The one thing is a nice toy, but the other is a business application."

HP plans this week to announce technology for integrating data warehouses and corporate networks using Internet technologies. For example, the OpenWarehouse Web Initiative was designed to provide Internet

net newcomers

Internet World introductions will include the following:

- **ProComm Software Corp.** is expected to unveil products for building intranets. At \$1,000, the Parvayr IntraServer includes a Windows NT Web server, a Hypertext Markup Language editor, a Secure Session Layer module for controlling access to Internet data and a Web/database connector from Novell Development Corp.
- **Bay Networks, Inc.** plans to introduce a new version of its Internet product, The LAN-to-Internet software allows up to 50 LAN users to access the 'net through a single IP address. —Mitch Wagner

browser-based access to data warehouses.

The vendor will also introduce Internet servers designed to be extremely reliable. Moreover, HP will unveil Prividium Authentication Server, a software product for corporate intranets that was designed to monitor access controls on a user-by-user basis. It keeps track of each user of an intranet and which pages that user is allowed to access.

Novell plans to announce technology for integrating NetWare networks with the Internet. This includes a suite of tools for authoring World Wide Web sites and a NetWare-based Web server.

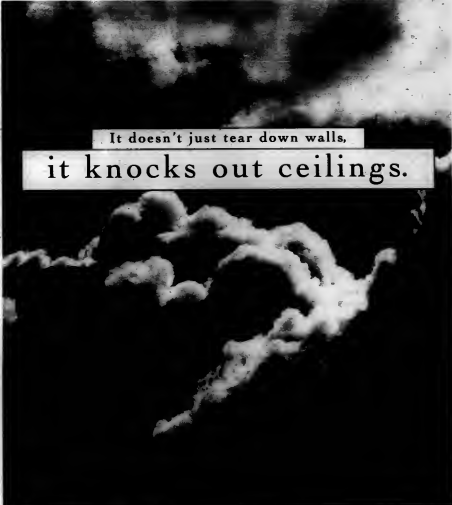
IBM will announce its Cryptologic encryption software, useful enhancements to its InfoSphere data search service and promote its System/390 mainframe as a repository for Web data.

Microsoft, meanwhile, will announce plans for migrating its proprietary online service, The Microsoft Network, to the Internet.

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Banyan investors urged to revolt

Dissidents take their bid to oust company president online

By Laura DiDio

The efforts of two small shareholders who are using the Internet and CompuServe to urge the ouster of Banyan Systems, Inc.'s president drew only a terse "no comment" from their target last week.

But everyone else seemed to have an opinion about Dave Mahoney and his stalled company.

The intrigue started two weeks ago when William Ibrah, formerly product manager for Banyan StreetTalk, teamed up with Jerrold Patz, a consultant who runs Patz & Associates. They posted online an open letter to Banyan shareholders, urging the shareholders to throw out Mahoney as a director at today's shareholder meeting.

"Banyan is imploding — and now the pace is picking up," said Ibrah, who now runs Symyx Systems, a consulting firm in Portland, Ore. He said the "sheer frus-

tration" of watching the market presence of Banyan Vines vanish spurred him to take action.

"I don't really think that we'll oust Mahoney — but we can make the board realize it has to make major changes," Ibrah said.

Banyan's revenue and earnings and Vines' market share have steadily declined in the past year.

After more than 30 consecutive quarters of profitability, Banyan last year began bleeding red ink. The Westboro,

Mass., firm returned to profitability in its just-ended first quarter for this year. The company earned \$369,000 for the period, compared with \$5.5 million in its first quarter last year. Sales in the latest quarter were \$24.9 million vs. \$33.7 million in revenue in its first quarter last year.

The company is struggling to recast itself from a network operating system vendor to a network services firm.

In its heyday in the late 1980s and early 1990s, Vines accounted

for 6% of all network operating systems installed. Banyan, however, had a much larger percentage of the Fortune 500 — 50% at one



An online appeal to shareholders rallied for the ouster of Banyan president Dave Mahoney (seated from left).

time, according to International Data Corp., a market research firm in Framingham, Mass. Today, it holds about a 3% to 4%

share overall. These days, there are fewer new installations as users migrate to rival Microsoft Corp. Windows NT Server because of uncertainty about the future of Vines, said Bob Sokolow, an analyst at Aberdeen Group, Inc. in Boston.

Market moves

Also, in the past year, Banyan executives have publicly stated that the company is spinning out of the network operating system business. The intent is to unbundle the StreetTalk directory services to run on other platforms, mostly NT Server, though Banyan will release Vines 7.0 in late fall, said Ed Cloutier, the company's vice president of marketing.

"Of course I'm going to vote to oust Mahoney," said Bill Sheehan, a Banyan shareholder and longtime user. Sheehan is a senior technical support specialist at Stone and Webster Engineering Corp. in Boston. "I would like to think that Banyan can turn things around, but realistically I don't think the company can succeed with current management."

Ibrah claimed he's received dozens of letters of support from shareholders and current and former Banyan employees and executives. "Most of the E-mail lays the blame for Banyan's current woes on Mahoney," Ibrah said.

Cloutier said the company respects the shareholders' right to express their feelings — however negative — via the proxy process.

Cloutier said Banyan was "concerned about how its users feel and does want to be responsive to their needs." Commenting on Banyan's latest financials, he said, "Two cents return per share isn't an ideal, but most investors and the analysts agree with the actions that Banyan has taken in the last six months."

Banyan in December added 80 people "to size the business for profitability and to make a significant investment in Internet and intranet products," Cloutier said.

Calls were made to four Banyan representatives, including Mahoney and Cloutier. No one would comment specifically on the bid to oust Mahoney or on users' concerns.

HP spiffs up OpenMail to stay in groupware game

By Tim Ouellette

New Hewlett-Packard Co. wants to be one of the groupware gang.

The Palo Alto, Calif., firm this week will announce plans to beef up its OpenMail managing software with Internet Collaboration Services.

HP will extend OpenMail's open messaging infrastructure — which supports many other vendors' electronic-mail clients — to run groupware applications and provide better access from the Internet. The company is trying to catch up to groupware foraging entities such as Lotus Development Corp. and Microsoft Corp.

Not the only game in town But until Lotus' Notes and Microsoft's Exchange shipped this year, OpenMail had been the only major client/server E-mail system available. It has an installed base of 2 million users, most in multinational corporations.

HP's Internet Collaboration Services will allow conferencing and threaded conversations via a World Wide Web browser, corporate directory access and syn-

chronization (see related story page 15); and group calendaring and scheduling with HP's OpenTime software. "I could see us using that a lot," said Jim Rundle, director of technical services at Purman University. "We've been looking at online scheduling, including HP's OpenTime." The Greenville, S.C., university uses OpenMail, including the OpenMail client, for all faculty, staff and students.

The following features will be added to the OpenMail managing software:

- Group calendaring and scheduling
- Threaded discussions
- Shared folders
- Corporate directory access and synchronization
- Web browser access to groupware features
- Work process engine

Additions are key Rob Enderle, a senior industry analyst at Giga Information Group in Santa Clara, Calif., said collaboration features are essential, especially for companies that replace a system such as IBM's Professional Office System (Profs) with OpenMail. "As much as people would like to yank out Profs, they got used to the group calendaring features," he said.

The collaboration and Internet integration will be available for OpenMail by November. The OpenMail server costs \$60 per client connection; the OpenMail client costs \$10.

DEC, CA join forces to boost enterprise wares

By Bob Francis

Digital Equipment Corp. and Computer Associates International, Inc. last week announced an agreement to use each other's products to deliver enterprise management systems.

The end result is similar to IBM's purchase in February of Tivoli Systems, Inc., which was bought on board to bolster IBM's SystemView.

Bill Malik, vice president and research director at Gartner Group, Inc. in Stamford, Conn., said the deal lets Digital jettison pieces of its Polycenter systems management software and gives CA a new market for its CA-Uni-center enterprise management software. "Digital's Polycenter wasn't really going anywhere beyond the Digital environment. This gives those users a long-term strategy for tying in with the enterprise," he said.

"For us, I think anything that broadens the CA-Uni-center package is good. That's what this does," said Norm Shockley, president of Accchain Technology, Inc., a Sunnyvale, Calif.-based CA-Uni-center user and reseller.

CA last year signed a deal with Sun Microsystems, Inc. in Sunnyvale, Calif., which also extended CA-Uni-center's reach, he said.

Joint development

The agreement calls for CA and Digital to collaborate on a unified enterprise management environment based on CA-Uni-center and Polycenter. Digital customers will be able to manage all Digital platforms — OpenVMS, Digital Unix and Windows NT — through this management environment.

That joint product should be available by year's end, the companies said. The following also will take place under the pact:

- CA will develop and build business software products for Digital software platforms, including OpenVMS.
- CA will acquire selected Digital Polycenter products.
- CA will resell Digital services and support. Digital's 64-bit Alpha system will ship with software.
- The companies will jointly develop products for the Internet.

Digital's Very Large Memory is a hit, but it comes at a price. See page 4.

Netscape pushes 'open' directory standard

By Kim S. Nash and Tim Ouellette

Netscape Communications Corp. last week became a cheerleader for an Internet protocol that provides a standard way to track end-user electronic-mail addresses and on-line access privileges.

Netscape wants to make the specification, called Lightweight Directory Access Protocol (LDAP), an open alternative to proprietary directory services in products such as Microsoft Corp.'s Exchange and Lotus Development Corp.'s Notes.

By early next year, all Netscape World Wide Web servers and browsers will support LDAP.

"Open Internet standards [such as this] are what we all should be striving for. Otherwise, you put a brick wall between the Internet and the rest of your company," said Ross Skinner, manager of information systems infrastructure at Del Webb Corp., a large construction company in Phoenix.

In translation

Users won't be able to fully exploit intranet applications until Internet software and internal systems speak the same language, Skinner said.

Network administrators could monitor and troubleshoot LDAP-compliant products from a central point because the various directories would be in the same format.

For example, at a company with a mix of Notes, Exchange and Netscape users, all E-mail addresses and privileges could be blended into a single directory for easier administration.

There would also be less need for expensive and sometimes unreliable gateways to translate between proprietary E-mail packages.

LDAP 101

The University of Michigan wrote the Lightweight Directory Access Protocol (LDAP) as a protocol to track end-user E-mail addresses and online access privileges. LDAP is a subset of the X.500 messaging standard with protocols for gateways to various Internet mail clients such as the World Wide Web and Notes. The beta version of LDAP 2.3 is available at <http://www.umich.edu/~mughost/ldap23beta.html>.

Netscape aims to show that "an Internet standards approach can do everything proprietary systems like Notes have been able to do," said Marc Andreessen, vice president of technology at the Mountain View, Calif., vendor.

LDAP isn't new. It is a lighter version of the X.500 standard that was proposed to the Internet Engineering Task Force early last year but has yet to be adopted.

But Netscape's approval — and its cajoling of 40+ vendors to stand behind it — should help LDAP win approval quickly, users and analysts said.

"Anything that ... gets all the multiple

players into one happy family has got to be good for the industry," said Tim Sloane, an analyst at Aberdeen Group, Inc. in Boston.

Microsoft didn't participate in Netscape's rally but issued a separate statement that it, too, plans to get behind LDAP. Future releases of Exchange, the Explorer Internet

browser and the Windows NT Server operating system will support the protocol, Microsoft officials said.

Netscape plans to embed LDAP in its Web software beginning next quarter with a Directory Server that will track end-user log-ons and other information.

Computer Associates International, Inc., Hewlett-Packard Co., IBM, Lotus, Novell, Inc. and Sun Microsystems, Inc. are among the heavyweights that also vowed support. LDAP editions of Microsoft's Exchange and Internet Explorer are due in the second half of this year.

EUROPEAN ART COMES TO THE SCREEN, WITHOUT THOSE ANNOYING SUBTITLES.



From the continent that gave us museums and luxury automobiles come their combined spiritual equivalent: Nokia monitors. Nokia is already a household name (and cafe and office name, too) throughout Europe. And now Nokia monitors are quickly winning the hearts and eyes of Americans too.

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*Refresh rates up to 85Hz available on 15" and 17" models. Refresh rates up to 100Hz available on 19" and 21" models. Refresh rates up to 120Hz available on 23" and 25" models. Refresh rates up to 144Hz available on 27" and 29" models. Refresh rates up to 168Hz available on 31" and 33" models. Refresh rates up to 180Hz available on 35" and 37" models. Refresh rates up to 200Hz available on 39" and 41" models. Refresh rates up to 220Hz available on 43" and 45" models. Refresh rates up to 240Hz available on 47" and 49" models. Refresh rates up to 260Hz available on 51" and 53" models. Refresh rates up to 280Hz available on 55" and 57" models. Refresh rates up to 300Hz available on 61" and 63" models. Refresh rates up to 320Hz available on 65" and 67" models. Refresh rates up to 340Hz available on 71" and 73" models. Refresh rates up to 360Hz available on 75" and 77" models. Refresh rates up to 380Hz available on 81" and 83" models. 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IBM builds Unix-to-mainframe bridge

By Michael Goldberg

Fishing for more mainframe application developers, IBM last week unveiled what observers called an interesting lure: a Unix server that contains a CMOS processor board as an RS/390 program.

The R/390, also called an RS/6000 with a System/390 Server-on-Board, allows users to work in Unix and then compile their programs for a mainframe operating system such as MVS.

"If you're more comfortable in a Unix environment, it would allow you to work on your code in Unix and then bring it across to an MVS file system. This system provides that bridge to get there," said Jeff Zado, a product manager

at Morrice Kern Systems, Inc., a Waterloo, Ontario-based application developer.

The IBM officials who introduced the R/390 at the company's Technical Interchange in Nashville last week promised discounts to application developers who pledge to bring new programs to update at least one application for System/390 users per year will get a 50% hardware discount, plus a free loan of software for up to four years.

But some users and analysts said the R/390 could also be used as a money-saving replacement for aging hardware.

"We have a number of main-

frame legacy systems, and we want to port to newer systems as we can" to newer systems, said Jack Mobilia, a technical consultant at Fidelity Investments in

Boston. "This offers us a chance to take our mainframe applications and to use the productivity tools in ADL, and have [programs] run side-by-side" with legacy ap-

plications, Mobilia added.

The R/390 comes on the heels of similar technology introduced last year for programmers working in OS/2: the P/390, a PC server that runs on an Intel Celeron chip and contains a CMOS processing board.

Analysts said the R/390, because it is based on an RS/6000, reduces — but doesn't eliminate — the I/O bottlenecks P/390 users experience. Depending on the demands of a specific application, the R/390 may work well as an application server, or it may just be used as the development machine, said John Young, an analyst at Clipper Group, Inc. in Wellesley, Mass.

John Phelps, an analyst at Gartner Group, Inc. in Atlanta, said the R/390 is vital to IBM's efforts to make the System/390 an attractive computing environment to replace with new applications.

Dual channel
The R/390 from IBM is an RS/6000 Unix server that also contains a System/390 processor board

Processor	PowerPC 601/603, S/390 CMOS System/390
Operating system	IBM AIX 4.1.1, OS/2, MVS/ESA 4.3.3, VM/ESA
Availability	July
Price	System to be announced

*Discount available for independent developers committed to developing software applications

Alcoa cans SAP's R/3 for Oracle

CONTINUED FROM PAGE 1

cus was already running Oracle's general ledger accounting software.

"If people said it, we bought it," said Keith Turnbull, Alcoa's executive vice president of strategic analysis and planning. The result was "a very fragmented and highly interfaced environment, which is

application suite in phases.

Alcoa will install Oracle's maintenance, purchasing and accounting modules this year. Manufacturing and order fulfillment modules will follow in the second phase. Some next year.

Alcoa expects to significantly streamline operations by furnishing its mining, processing and manufacturing units around the globe with common Oracle applications and data.

As part of the deal, Alcoa also will install Genpro process manufacturing software from Datagis International, Inc., an Oracle partner in Valhalla, N.Y.

All manufacturing plants, for example, will have access to the same data about chemical processes; that will enable all plants to perform all processes. Under this scenario, Alcoa could dynamically shift manufacturing orders between plants to reduce shipping distances and balance manufacturing loads.

Under a year-old project known as the Common Infrastructure Initiative, Alcoa is also deploying a standard computing hardware platform of about 60,000 486-based PCs that run Windows NT.

These are linked via a network of 400 NT-based communications and application servers, which run Microsoft Corp.'s SASE and Exchange servers. Alcoa is using Hewlett-Packard Co. Unix machines at the back end.

 Takes from the SAP R/3's branches: Lessons learned. See page 69.



why we decided to standardize on a single system," he said.

Although R/3 was considered a standard integrated applications platform, Turnbull said it was ultimately rejected because it's "too rigid" and can't be installed easily on a module-by-module basis.

More and more, big companies have been standardizing on a single software package to integrate business operations. The irony in this case is that it was SAP AG that popularized the trend.

"What SAP has done for the market is not only legitimate, but also add sex to the idea that a single package is the way to go," said Bobby Cameron, a senior analyst at Forrester Research, Inc. in Cambridge, Mass.

Turnbull said Alcoa was attracted to Oracle software because of its "modularity," which will enable Alcoa to migrate to the

Privacy alert

CONTINUED FROM PAGE 1

should be kept confidential," said Paul Sagan, editor and president of new media at Time, Inc., which runs the Pathfinder site of the World Wide Web (<http://pathfinder.com>) for parent company Time Warner. "There's a concern about Big Brother — that there's so much information flowing online and aggregated about you, that a person can find out a lot about you with very little effort."

Name and address directories such as Database America's are called from phone books, marketing lists and public records such as drivers' licenses and voter registration lists. Until recently, these were expensive collections, often available only to savvy marketers and investigators who knew where to find them.

On the cheap

Now, the same information is available for less than \$100 on CD-ROM or free on the Internet. And that diminishes privacy for people who want to hide, including debtors trying to hide from creditors, crime victims who are afraid of assaults or just average citizens who want to protect their right to be left alone.

Bob Perkins, vice president of online services at Ticketmaster Corp. in Los Angeles, said he expects privacy conventions on the Internet to evolve. Users are already able to opt out of most online directories. "As things develop on the Internet, you're going to mirror some of the rules and regulations and social and ethical conventions that have already evolved for the older-style media," Perkins said.

Robert Hoffer, general manager and vice president of new media at Database America in Montvale, N.J., agreed.

The company provides its database of 90 million names to several Web sites, including Yahoo, CompuServe.com (<http://www.compuServe.com>) from Baysan Systems, Inc. and BigBook, Inc. (<http://www.bigbook.com>). Database America also sells the database to CD-ROM publishers. Reacting to privacy concerns, the company removed unlisted phone numbers from the database.

"We think the white pages are a good place to make a stand with the privacy issue," he said. "If you have opted to be listed, you've opted to make that information public. And if you've opted to be unlisted, you've opted for privacy."

However, privacy advocate Robert Ellis Smith said there is a much greater loss of privacy when information is published on

the Internet rather than in white pages because the Internet is worldwide. "The white pages is cumbersome, and there's no automated search facility," said Smith, editor of the "Privacy Journal," a monthly newsletter published in Providence, R.I. "With something like Yahoo, you can target people. Think of the Unabomber and how much more accurate he could've been in finding people."

He urged IS managers to be as cautious with customer information as someone is when manufacturing explosives. "Information that a decade ago was innocuous could be seriously threatening today. Anyone manufacturing a bomb or other potentially dangerous equipment has to consider the negative uses of the technology in constructing their product," Smith said.



Privacy alarms have been sounded because the Yahoo/Database America database included unlisted phone numbers and addresses

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EtherPage links pagers to E-mail

By Stewart Deck

What happens when you're completely wired, but the lines of communication get crossed?

You may be waiting patiently, pager in your pocket. But it remains silent because

the message you're expecting arrives by electronic mail. Or perhaps you call your help desk with an urgent request, but the only technician is at lunch.

EtherPage, from Personal Productivity Tools, Inc., may help ease your frustration. EtherPage is an automated paging sys-

tem that lets users on a Unix-based network send complete messages to pagers.

It can be configured with network monitoring tools or integrated with shell scripts to transmit paging messages as soon as a network problem occurs.

EtherPage also can be set to filter a us-

er's E-mail so the message goes directly to his pager.

Among its many uses, EtherPage can be used as help desks and for network monitoring.

For example, the system can be set up to send alerts to a network administrator, who can go to the affected terminal—in some cases before the user knows there is a problem, said David Coelho, president of Personal Productivity Tools.

Hewlett-Packard

Co., uses EtherPage in its 24-hour internal network support organization in San Jose, Calif.

The system "allows us to anticipate problems before they reach certain thresholds," said Craig Carmele, a network engineer at HP.

The paging system sent more than 9,000 pages last month, notifying technicians and support managers when a network problem occurred or when preset alarms were triggered on-site or remotely. "This system gives us a lot of peace of mind and security," Carmele said.

EtherPage is a central cog at the help desk at Ameritech, Inc. in Waukegan, Wis. If a help call reaches Priority 1 status—specifically, a problem that prevents more than 100 people from doing their work or affects "high-priority" users—EtherPage notifies a specific group of technicians and managers. It continues to send out updates every half hour until the problem is solved.

By keeping everyone informed, EtherPage lets the help desk respond to questions about the status of problems and solve them even before some affected people are aware of the situation, said Dan Ajibola, a lead analyst at Ameritech.

A step further

Personal Productivity Tools has taken advantage of the increased functionality of pagers, building these features into management, workflow and E-mail applications, said Waverly Deutsch, a senior analyst at Forrester Research, Inc. in Cambridge, Mass. "It's a nice niche technology that extends the ability of [these] applications to interface with multiple computing devices."

Brian Teal, a systems administrator at a major cellular provider in Atlanta, uses EtherPage with programmatic applications. These applications run scripts that continually monitor the company's systems and page technicians when problems arise.

"We are absolutely dependent on EtherPage," Teal said. "This is the only way that we've found to quickly communicate crucial information to all the people in the groups."

Teal's EtherPage system sent out an average of 283 programmatic pages per day last month.

Not all applications are so mission-critical. "It's a boy!" crowed a recent message sent on HP's EtherPage system.



User Brian Teal says his cellular provider firm is absolutely dependent on EtherPage.



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SQL Server 6.5 tailgates rivals

By Dan Richman

The latest version of Microsoft Corp.'s SQL Server relational DBMS is probably not ready to challenge its Unix-based big brothers from Oracle Corp., Sybase, Inc., Informix Software, Inc. and IBM.

But the improvements in Version 6.5 of the database management system, slated to ship by May 1, make such a challenge not only possible but inevitable in future releases.

A gaggle of new features makes SQL Server "a real pleasure to use," said beta

user Stephen Roberts, an analyst/programmer at Duke University Medical Center in Durham, N.C.

In particular, Roberts praised new administrative tools that make it simpler to monitor and control activity on all networked servers, locking schemes that can

be varied by application and the server's ability to automatically generate Hypertext Markup Language (HTML) pages. He said required changes to applications that run under Version 4.21A seem minimal.

Beta user Chuck Taylor, a consultant to the Federal Deposit Insurance Corp. in Washington, said Version 6.5 performed about 30% faster than Version 6.0 on a two-processor Compaq Computer Corp. ProLiant. He described the HTML generation scheme as "pleasant and elegant" and said the new ability to back up and restore individual tables was "imperative and had been very much lacking."

"It's now the best RDBMS for Windows NT, as it should be," said Al Hibwa, a senior analyst at Gartner Group, Inc. in Stamford, Conn. "It is a good value for the money, with features included that Oracle charges extra for, like distribution of transactions among multiple servers."

But in the new version an improvement in degree or in kind? Bobby Cameron, a senior analyst at Forrester Research, Inc. in Cambridge, Mass., said it's the latter.

"SQL Server is already a potent force in workgroups. With 6.5, it becomes a legitimate contender for the business of Oracle, Sybase and Informix," Cameron said. Hibwa was more conservative. "Version 6.5 catches SQL Server up to its competitors in some respects, but in terms of performance, it has a ways to go," he said.

The DBMS' Windows NT-only nature, which almost certainly won't change, is both a help and hindrance, he noted.

Writing to only one operating system fosters rapid development, but some say that will limit the RDBMS' portability. The "single operating system" philosophy makes SQL Server's performance dependent on Microsoft's development of NT and on hardware vendors' implementations of it.

For example, Windows NT won't support the clustering of symmetrical multiprocessing machines until sometime next year. SQL Server will support clustering in its first release after that, said Jim Ewel, a Microsoft group product manager.

Pricing for Microsoft SQL Server 6.5 will range from \$1,999 for five users to \$34,999 for 250 users. A free, 120-day evaluation version is available at <http://www.microsoft.com/sql/>.



It raised product announcements at DB/Expo '96. See page 50.



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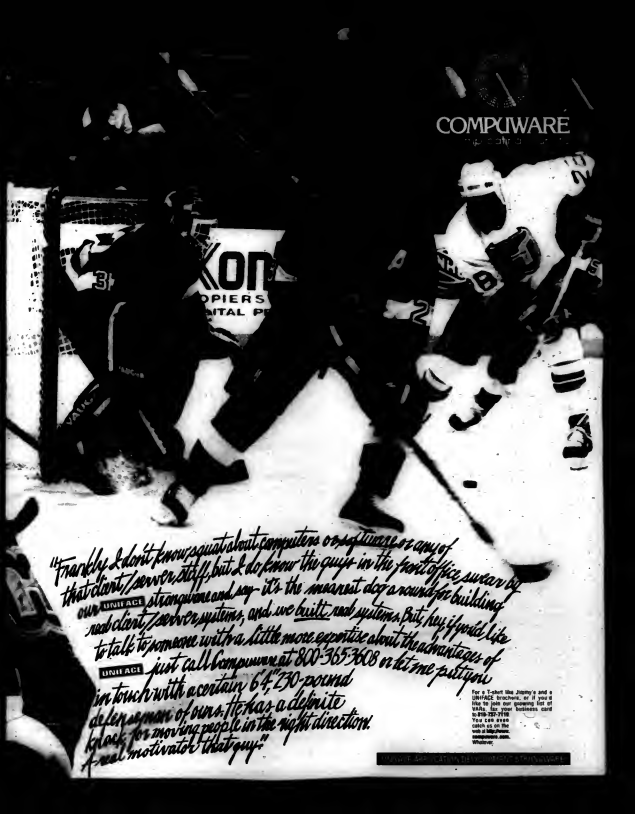


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*A few thoughts about motivation and UNIFACE
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Notes to widen messaging platform

By Tim Ouellette

Lotus to Notes users: You make the call.

Lotus Development Corp. plans to beef up the wireless and voice messaging features of Notes 4.0 within the next few months. The company will give users more options with which to access Notes databases and their voice mail.

The Cambridge, Mass., subsidiary of IBM will offer Notes Pager Gateway 2.0, software that provides paging notification from

Notes and adds support for two-way paging technology. Lotus also will deliver an integrated voice messaging product that will place voice mail messages into the Notes Mailbox.

Some users consider these products secondary to the immediate need for secure client/server messaging with Notes.

"We sort of view this as second generation messaging," said Pat McCormick, systems development coordinator at the University of Michigan in Ann Arbor.

"Right now, we are focusing on basic messaging with Notes, but I think we will be looking at it later this year."

Two-way paging is still relatively new but shows promise in database and communications applications such as Notes, which can offer pager access directly into a Notes database.

"If I get an important message from my boss, I want to know about it regardless of where I am," said Peter Hoskins, a vice president at Emerging Technology Solutions in Denver. "And once two-way units [from SkyTel Corp.] stabilize a bit, we will be able to initiate [Notes] queries from the pager itself."

Another product, tentatively called Integrated Voice Messaging, will let users access voice messages from the Notes desktop. A telephone icon will appear next to any voice messages; a multimedia-equipped PC is required to listen to the sound file. Lotus officials acknowledge

that video and audio add-ons to Notes haven't received much attention yet from the user community. But Lotus plans to provide versions of Notes with bundled templates and forms that will help users get a head start using and managing these different data types — as well as imaging — in Notes applications.

Joe Forgiome, vice president of business multimedia products at Lotus, said the company wants to make Notes a platform for different rich objects such as video, images and voice.

Lotus currently sells a product called Phone Notes that lets users access Notes databases from a telephone.

And Big Sky Technologies, Inc. in San Diego already sells a Phone Notes add-on called MessageCenter that lets users access voice mail from within Notes.

Notes and Exchange may wind up cohabitating peacefully. See page 47.

Speaking out

Novell, Inc. is working on voice technology for GroupWise [CW, April 11] and third-party vendors have announced several voice-related add-ons to Microsoft Corp.'s Exchange Server.

All these projects are held back by the fact that private branch exchange providers will run their systems on proprietary formats, which limit the use of vendors' voice-integration software. Lotus products will work with Lucent Technologies' systems, though discussions are in progress with Siemens Breda Communications, Inc.

—Tim Ouellette

Talking back

Lotus has plans to make Notes more interactive, with voice messaging and two-way paging support.

Phone Gateway 2.0: Lets users with two-way pagers enter a full alphanumeric response to a Notes page or initiate access to a Notes database from their pager.

Integrated Voice Messaging: Allows voice mail messages to be Notes Mailbox items, from which they can be managed and played on a multimedia PC or forwarded to the voice system to be heard.

Merger may dial up savings

Nynex, Bell Atlantic customers may gain cheaper service

By Kim Girard

Telecommunications managers and analysts predict the pending merger between Bell Atlantic Corp. and Nynex Corp. could lead to better and cheaper service, especially for Nynex business customers.

Specifically, users anticipate that the megadeal, announced last week after a lengthy courtship between the two Baby Bells, will lead to turnkey network systems.

As if the merger with Bell Atlantic weren't enough excitement for one week, Nynex also announced a deal with Sprint Corp. that will bring the regional Bell operating company into the long-distance market.

"I think we now have a significant player in the marketplace," said Ronald West, manager of telecommunications and office automation at Shearman and Sterling in New York. "Business will see a major player in towns who will have to try to get properly positioned in the market with services they provide."

The merger brought together the country's two most lucrative telecommunications markets. The new company, called Bell Atlantic and based in New York, will link 26 million business and home customers from Maine to Virginia.

"The ability to package and price

The new company formed from the Nynex/Bell Atlantic merger will be based in New York and retain the Bell Atlantic name.

1995 revenue	\$24.4B
Number of lines in service	19.8M
1995 revenue	\$13.4B
Number of lines in service	17.1M

States comprising the operating territory of Nynex/Bell Atlantic



in terms of the megadeals will give [Bell Atlantic] a tremendous advantage over other rivals," said Robert Rosenberg, president of In-Sight Research Corp. in Livingston, N.J. "I would think they're going to be in 'biscuit city' if they keep their rates low enough. They'll be able to offer better packages with better prices at a lower unit cost within the geography."

A tricky part of the merger will be growing pains as both companies migrate toward the same network platform, said Rosemary Cochran, a principal at Dedham, Mass.-based Vertical Systems Group.

The project will require "huge infrastructure changes" to synchronize services such as frame relay

and Integrated Services Digital Network (ISDN), as well as the realignment of vastly different rates for differing services. Services should expand overall under the merger, which should benefit Nynex business customers in particular, Cochran said. "Nynex traditionally has not been very responsive to any but the largest of customers," she said.

Jeffrey Fritz, telecommunications engineer at West Virginia University in Morgantown, said it is too soon to tell how service will be affected.

"I would hope that as a result of the merger we'd see ISDN costs drop, become available in more places and be better supported," said Fritz, who is a member of the national ISDN User's Forum.

POPware targets enhanced service

By Stewart Deck

In the 27 years since electronic mail first appeared on the Internet, there have been few major introductions of system-level services. NetCentric Corp. plans to change that with POPware.

The technology, announced last week, will give Internet service providers the ability to provide enhanced services to subscribers through each point of presence, or POP. A POP is what an Internet access provider uses to switch subscribers on to the Internet.

More than access

"NetCentric is the first company I have seen that understands that these POPs are more than just access faucets; they're actually service platforms," said Jerry Michalski, editor of "Release 1.0," a technology newsletter in New York.

"This architecture will let providers start delivering some cool new services," he

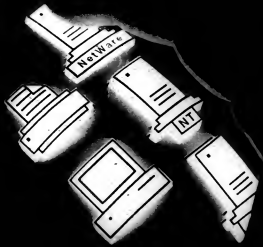
said. For instance, POPware could let Internet service providers provide customized mailboxes for E-mail, faxes and World Wide Web pages. It could also allow faxing and videoconferencing through POPs.

Jerry Sisson, a support center manager at Creative Financial Corp. in Richmond, Va., has been eagerly anticipating these enhanced features.

"We've been doing a universal mailbox, and a net of compatible and consolidated services is very appealing," he said.

POPware will let Internet service providers focus on customer service, and the enhanced services will distinguish them from other providers, said Sean O'Sullivan, founder of NetCentric in Cambridge, Mass.

"NetCentric is right in the middle of a really hot business opportunity. Whoever has the most powerful service platform is going to be in the best position strategically," Michalski said.



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1996 first-quarter earnings

Company	Revenue January through March	Percentage change from 1995	Profit/Loss January through March	Percentage change from 1995
Chips.com	\$44M	24%	\$5.3M	-33.4%
Chen Light	\$835M	75%	\$80M	-56%
Chlor	\$44.4M	60%	NA	NA
Compaq	\$4.2B	40%	\$134M	8%
Dats General	\$315M	18%	\$6.3M	157%
Digital	\$3.6B	4%	\$124M	68%
Dynacore	\$55M	35%	\$4.7M	67%
Unisys	\$1.6B	-3%	-\$13.4M	-143%
Value	\$1.73M	NA	\$81,000	NA

* Data is a wholly owned subsidiary of Apple Inc. Not applicable

PC earnings looking good

By Randy Weston

Quarterly earnings reports continued to roll in last week, but contrary to the previous week's reports, the news on the PC front was rather good for a change.

As expected, Digital Equipment Corp.'s PC sales slid 10% below the same period last year, but the loss was offset by strong sales of the year-old Alpha server line. The flourishing server division has led the company on a streak of six consecutive quarterly gains.

Early indicators

Also posting a successful quarter was Compaq Computer Corp., whose quick reaction to early indications of a market slowdown — slashed PC prices — allowed it to grab competitors' business. Compaq boosted its North American market share to 5% during the quarter,

even though the industry as a whole was at a virtual standstill. President and CEO Eckhard Pfeiffer also credited tight inventory management.

Despite Apple Computer, Inc.'s \$740 million loss during the quarter, its \$740 million subsidiary Claris Corp. reported record revenue. But strong sales of products such as the database software FileMaker Pro 3.0 and the ClarisWorks line weren't enough to counter dwindling sales of Apple computers.

In pure percentage points, Unisys Corp. posted a loss even larger than Apple's, falling 142% below last year's profit as its mainframe market continued to disappear. Company officials blamed the \$13.4 million loss on a "transition period." Unisys began restructuring into three business divisions at the start of the quarter and slowed shipments of large-scale systems while switching to a new line of enterprise servers, according to officials.

It attributed much of that to start-up costs. The firm had predicted a loss of between \$100 million and \$140 million. As an AT&T division, Lucent lost \$22 million in the same quarter last year.

SHORT TAKES Ascent Technologies, Inc. last week announced an initial public offering of 2.6 million shares of common stock at \$14 per share. The Rockville, Md., firm makes information security products for client/server platforms and communications protocols.

Nathan Morton has resigned his position of Open Environment Corp., a Cambridge, Mass., middleware firm.

Power Computing dishes out faster, cheaper Mac clones

By Lisa Piccirilli

Power Computing Corp. wants to be the Burger King of the Macintosh clone market.

The 3-year-old Macintosh compatibles maker wants users to have it their way; the firm is trying to help users do that by offering custom systems, bundling popular software and beefing up corporate sales.

Power Computing's strategy borrows from the successful tack taken by PC clone makers Compaq Computer Corp. and Dell Computer Corp.

Because Power Computing has an exclusive relationship to buy PowerPC chips from IBM, it's been able to offer machines that are faster and cheaper than those from Apple Computer, Inc.

For example, this week Apple announced systems that use the 150- and 133-MHz PowerPC 604 chips, but Power Computing one-upped Apple by unveiling the first Power Macintoshes that use IBM's 180- and 166-MHz 604 chips (see chart).

Closing the gap

Power Computing doesn't just want to beat Apple's pricing and performance; it wants to close the price gap between PCs and Macintoshes, according to Steve Kahng, president and CEO of the Round Rock, Texas, company.

That's expected to happen when Power Computing ships its first PowerPC Platform by the end of the year. The PowerPC Platform formerly was called the Common Hardware Reference Platform (CHRP). Power Computing will ship its machines with a version of System 7.5.x for PowerPC Platform and may offer a CHRP system bundled with Windows NT.

Power Computing already is the only Macintosh clone maker with a license to bundle Microsoft Corp.'s best-selling Office suite.

That is also expected to work in Power Computing's favor as it attacks the corporate market. The company plans to add its 20-person sales staff dedicated to major accounts. The firm's goal is to increase corporate sales from 30% to 50% of total revenue.

Because it is privately held, the company wouldn't provide sales figures, but Pieter

Hartnook, editor of "The Hartnook Letter," an industry newsletter in Alameda, Calif., said Power Computing ships about 10,000 units per month. He said he expects the company to ship 250,000 units this year.

Apple's current financial problems haven't directly impacted Power Computing, but the overall viability of the Macintosh platform could impact Power Computing's plans.

"In the short term, their problems have had no impact at all on us," Kahng said. "We depend on them in the long run to turn the company around."

Lower of power

New clones such as the PowerTower line are faster and cheaper than Macintoshes. Power Tower line pricing will vary, depending on processor speed and other options.



High-end PowerTower line
Processor: PowerPC 604 chip
Hard drive: 2G bytes
Cache: 32K bytes (Level 2)
Video RAM: 2M bytes

Price	Features
\$4,995	180-MHz processor, 32M bytes of RAM, 4M-byte 128-MB graphics accelerator card
\$4,995	166-MHz processor, 32M bytes of RAM, 4M-byte 128-MB graphics accelerator card
\$4,995	180-MHz processor, 16M bytes of RAM
\$2,795	166-MHz processor, 16M bytes of RAM

Kahng is no stranger to turnarounds. Power Computing thrived early on, but its staff has grown from just 15 employees a year ago to 300 employees today. It now has its own manufacturing plant and a new order-tracking system. The firm also is increasing its technical support staff.

This growing infrastructure is what convinced Mark Sierline, director of editorial publishing systems at Gruner & Jahr USA Publishing in New York to consider Power Computing.

Gruner & Jahr recently upgraded three machines, including one system from Power Computing.

"We wanted to test what we could get for the same money," Sierline said. "We ended up getting 30% more performance out of the Power product than the comparable Apple product."

Briefs

S&P downgrades Apple debt

Standard & Poor's dropped its debt rating on Apple Computer, Inc. last week. According to S&P the downgrade reflects Apple's diminished liquidity, continuing expected losses for the remainder of this year and uncertain long-term prospects.

Lucent posts Q1 loss

Lucent Technologies, Inc., which was spun off from AT&T Corp. last month, reported a first-quarter net loss of \$103 mil-

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| 1ae. Manufacturing and Extractive | | 30. Chief Investor Relations Officer | | 42. Other | |
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| 1ag. Manufacturing and Extractive | | 32. Chief Mergers & Acquisitions Officer | | 44. Other | |
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Microsoft



Will the Internet bring an end to business computing as we know it?

Not at all. It will simply knock down the walls between users and the information they need.

What was once thought to be a lofty dream is about to come true: access to any fact or figure, at anytime, from any place. Happily, those who've begun the transition to client-server already have much of what they need in place. And to help businesses incorporate the Internet/intranet into their operations, Microsoft is integrating the necessary technology into many of its products — from desktop to server to tools.

For example, it's never been easier to connect desktops to the Internet. That's because both Microsoft® Windows® 95 and Windows NT® Workstation operating systems have all the "plumbing" built right in. Viewing content is just as effortless. With Microsoft Internet Explorer, users can browse the Internet (or internal corporate webs) whether they're working on the Windows platform or on the Macintosh.®

Of course, making web content easy to view is only the beginning. To be useful to organizations, content has to be easy to create, too. Which is why the latest generation of Microsoft Office applications, along with Internet Assistants, allow users to develop web content without programming. They simply save their work as HTML, the way they would any other document. Such ease-of-use also extends to the newest member of the Microsoft Office family, the Microsoft FrontPage™ web authoring tool, which lets users create and manage entire web sites, even if they've never so much as programmed a VCR.

The Internet is very much a part of our BackOffice™ family, too. With Microsoft Internet Information Server, we've extended the performance of Windows NT Server to make the ideal Internet platform. Now every organization can host and manage web content and applications securely and reliably. And, with Microsoft Exchange Server, secure and reliable e-mail is also a reality, whether it's traveling over the Internet or within your organization.

The truly interactive web page has arrived as well....and with it, full motion video, audio and moving text. Advances made possible by technologies like ActiveX™ controls, which let developers embed sound, video, and applications without having to learn new languages.

Yes, the walls are coming down, but it's not the end of business computing. Just the next, most practical evolution.

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Viewpoint

No show

For a good example of why the Internet won't change life on earth as we know it anytime soon, all you had to do was point your browser at <http://www.interact96.com> last week. That was the address of Interact '96, billed as "The World's First Virtual Conference," or sort of a trade show without the cab lines. But I don't think it had Comdex organizers shaking in their boots.

Interact '96 was a bold experiment, the first attempt to duplicate the look and feel of a trade show on the World Wide Web. You could walk through a virtual show floor, chat with other attendees, attend virtual conference sessions and sign up for product literature, all without the crowds and expenses usually associated with trade shows. But the virtual conference featured its own brand of aggravation.

For starters, you couldn't take full advantage of all the Interact '96 features without a Java-enabled browser and a baker's dozen of plug-in programs, many of which were still beta-test versions of questionable reliability. Once you were up and running, there wasn't much to see on the floor. The chat rooms were, uh, subdued. Most of the activity in the ones I checked out consisted of people asking "Is anybody here?"

Interact '96 was a technology marvel devoid of content. That's not to knock the show's sponsors (which, incidentally, include *InfoWorld*, a sister publication to *Computerworld*). They said up front that the show held plenty of risk. I think the lesson of Interact '96 is more in the limits technology faces in simulating reality.

In other words, the fact that you can build a trade show on the 'net doesn't mean you should. Even if Interact '96's technology was smooth, it would have lacked the noise, people, giveaways, nightgale and, yes, even the legacy product demonstration guys.

There are grand predictions these days that the Internet will change the way we do all kinds of things. We'll shop for clothes, vote, buy cars, book airline tickets and hold kafferklatiches in cyberspace. But many of these rose forecasts won't pan out for the same reason a virtual trade show failed to shake the world last week: People don't always default to the most efficient way of doing things. The 'net may streamline the buying process, but it can't duplicate the sensation of test-driving a car, chatting with neighbors or doing lunch. Interact '96 was a good effort. But I think I'm still going to Comdex this fall.



Paul Gillis, Editor
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Industry observers pore over Java

In response to John Gantz and his largely ill-informed Viewpoint column "Java: An emperor wearing no clothes?" CW, March 25: The implications of Java to the industry are staggering. Applications will be absolutely portable to any hardware that has Java support. This will include everything from the next generation of NetWare servers to a modified Sega. The pre-installed operating system will cease to be a method of locking developers and consumers in to a particular paradigm.

It's unfortunate that an individual such as Gantz, whose organization is involved in predicting industry trends, should have overlooked such issues. The industry is about to be transformed.

Andy Coyne
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It was refreshing to see John Gantz's column about Java. I was beginning to think there was something sacred about this process. Where was the criticism?

Gantz is very correct when he compares the marketing of Java to that of Windows 95. It's indeed a coup for Sun. Recently, I have been evaluating Java and JavaScript; indeed, [they are] very different processes.

My basic conclusion is that there is a close analogy between them and an earlier evaluation of the Distributed Computing Environment and QLE. I support Gantz's skepticism about Java.

Guy Conbar
Phoenix

While Gantz expresses some healthy skepticism about Java, his concerns about the concept of building programs out of applets show a lack of awareness about modern software technology.

[Gantz wrote], "There's no design science or common wisdom about building programs from applets." This is true now, but the Java concept of portable, compact, object-oriented programs is directing a lot of attention to this problem. Java will really come into its own when there is a standard framework for specifying interfaces among applets.

The industry has much work to do on Java, but if it does, the strength of the basic concept realized will transform the industry.

Tim Wood
San Francisco

Not everyone wowed by Win 95

In "NT 4.0 looks good in beta version" by Mark Minasi [CW, March 11], Minasi says Windows NT 4.0 doesn't support Windows for Workgroups with the Network Client Administrator tools and that this is OK because Windows for Workgroups "... just isn't relevant anymore." I beg to differ. Many of us who still support networks in the real world haven't jumped on the Windows 95 bandwagon because we have yet to see a compelling reason to do so.

Windows for Workgroups runs great on our installed base of 1486 machines, much faster than Win-

dows 95, to say the least. I think it's time to acknowledge that the entire world didn't upgrade its user base to Windows 95 on Aug. 24, as many trade magazines would have us believe. It's unfortunate that Windows for Workgroups support is declining when we don't yet have a replacement that is truly a real upgrade.

Michael Hare
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Laberis left legacy

In an industry where the word legacy has been twisted ironically to refer to a lingering problem rather than an accomplishment, former *Computerworld* Editor in Chief Bill

Laberis' legacy is filled with positive attributes. Not the least of these was his recasting of *Computerworld*'s role into a more useful resource. Bill leaves *Computerworld* in the hands of a well-prepared staff.

Jay Woodruff
Woburn, Mass.
7660.3620@compuserve.com
More letters, page 39

Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillis, Editor, Computerworld, PO Box 977, 500 Old Connecticut Path, Framingham, Mass. 01901. Fax number: (508) 875-0930. Internet: letters@tw.com. Please include an address and phone number for verification.

Richard Finkelstein

Separating the cybergems from the cyberjunk

Information systems managers are deluged with Internet-related product announcements. On just one ordinary day this month, 20 new Internet and intranet products were touted on the PR Newswire. So how do you determine which ones are important and which are just recycled software with an Internet paint job?

Here's the test. An Internet-related product is truly valuable if it allows the recentralization of application deployment at the server; that is the real benefit of Internet and intranet computing.

This doesn't mean applications must execute on the server. Technology such as Sun's Java, Netscape's JavaScript and Oracle's Network Loadable Objects let servers send code to the desktop for execution. But whether the software applications run on the server or the desktop, they must be deployed entirely from the server for you to reap the full benefits.

In other words, not a single line of code should be installed on the desktop.

Yes, this is strikingly similar to the old world of mainframes and 3270 or VT100 terminals, except that the new scheme is more flexible and the terminals have a graphical user interface (the browser) instead of little green characters.

The server-centric approach virtually eliminates the high deployment, maintenance and upgrade costs that are the bane of today's client/server applications. Inexpensive and easy-to-use desktop hardware can replace costly and complex Windows PCs. Application deployment is a

slam dunk because any application on the server is immediately available to all users.

Maintenance and upgrades for applications are handled in one spot — on the server. No need to send out faxes to thousands of users. No need to renovate thousands of PCs every two years because of new operating systems and software packages. Application monitoring, tuning and support are handled by a group of technical specialists — not power users with more profitable things to do.

Of course, this requires more network bandwidth, but telecommunications costs have plummeted in the past 10 years. Rather than invest in PC hardware that is obsolete every two years, organizations will invest in more bandwidth, which is never obsolete.

Not everyone is excited about Web-based application deployment. Microsoft's business model is based on client-centric deployment of Windows. That is, every desktop must get a full complement of operating systems, applications, Internet software and software drivers.

But new-wave companies such as Netscape and Open Text — as well as some old-timers such as Oracle, IBM and Sun — are seizing the opportunities of Web-based application deployment.

Let's apply this test to three products. Open Text's Livelist document and workflow software is installed entirely on the server and requires only a browser at the client. It passes the test. Lotus' Notes is Web-friendly, but the client software must still be installed on every workstation. Microsoft's Exchange Server does even worse. It uses only the Internet for transport and relies on client-based software to build and maintain documents.

There's no question that Microsoft still dominates desktop computing, but it is making the same mistake IBM made a decade ago. It's trying to hold on to the past while the future whizzes by.

Finkelstein is president of Performance Computing, Inc., a consultancy in Chicago.



Here's a test for determining which Internet products have the right stuff.

Michael Schrage

Beware of software selection monopolies

All good organizational insights know, a camel is a horse designed by committee. But what do you call software selected by the corporate selection committee?

- a) A political football.
- b) A calculated compromise.
- c) The best possible buy.
- d) All of the above.

The correct answer is, of course, e) You never know.

But that hasn't stopped the formation of software acquisitions committees from being one of the fastest-growing phenomena in corporate computing. And why not? Just as war is too important to be left only to the generals, software is too important to be left to the geeks.

Putting a few managers, intended users, computer-literate MBAs and a purchasing manager onto a software selection team is a nifty way to reinforce those vital values of participation, collaboration and customer sensitivity.

Wouldn't it be a good idea then, if heaven forbid, the techies used these software selection committees to advance their own agenda? Don't think of it as co-opting; think of it as enlightened guidance. Then again, some committees have the

Apple (or Oracle or Sybase or SAP) outsize who bullies everyone on the committee into believing that his favored package is the Holy Grail.

Other corporate selection committees trumpet their "objectivity" — they're the ones with the features checklists and Dilbert-esque characters who can quantify why Sybase's PowerBuilder is more cost-effective than Microsoft's Visual Basic 4.0 (or is that the other way around?).

Ultimately, these committees say more about the politics and culture of an organization than about its computational and informational needs. In fact, a company can learn an awful lot about itself by really looking at how its acquisitions committees make their choices for their choices made for them.

But the most important question is whether acquisitions teams really deliver the goods. Does the software they choose have the blend of functionality and organizational support that will make it successful?

On the positive side, it's surely better to have the right group of people select software that is merely technically adequate but culturally compatible than it is for the information systems department to select software with technical super-

iority but zero organizational support. Technical expertise without political pragmatism is a proven recipe for distributed disaster.

These committees are also an excellent mechanism for forcing managers to understand the real-world trade-offs associated with client/server computing and intranets. Serving on an acquisitions task force ought to qualify as a form of continuing education.

But one unfortunate aspect of these committees is that they are de facto monopolies, what they say goes. That's foolish and potentially dangerous.

So consider this modest proposal: Organizations should set up rival selection committees. Create a market mechanism that requires people to do a better job than the other committee. It's a great way to minimize the threat of monomanical software skills and sensitize more people in the organization to what the software should be.

Let's put it another way: Don't just ask software packages to compete against one another; get the selection committees to compete as well. The results will be better.

Schrage is a research associate at the MIT Media Lab and author of *No More Tools!* His Internet address is schrage@media.mit.edu.

A modest proposal: Set up rival committees to produce the best results.

Corporate software selection is too important to be left to the geeks.

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A Crash Course in Netiquette

Definition of Netiquette

Network etiquette; a set of rules that reflect long standing experience about getting along harmoniously in the electronic environment (electronic mail and newsgroups).

The basics of netiquette are as follows:

- Keep your messages short and to the point, abbreviate whenever possible, and don't include an extravagant signature at the bottom of your message that lists your name and electronic mailing address.
- Don't use ALL UPPERCASE LETTERS. This is considered to be "shouting." To emphasize a word, use asterisks as you would quotations marks.
- If you want to criticize, criticize the idea, not the person. Don't criticize a person's spelling or grammatical errors. Today's worldwide networks encompass users willing to learn English and trying to participate; they deserve encouragement, not criticism.
- Don't overreact to something you read on-line. If you get angry, don't reply right away. Go take a walk or, better yet, sleep on it. Electronic mail is easily forwarded. Don't say anything that you don't want to wind up on your boss's desk.
- Don't ask members of a newsgroup to censor a particular person's contributions, or disallow discussion of a topic that you find offensive; instead, create a kill file so that those messages don't appear on your screen.
- If you ask a question in a newsgroup, request that replies be sent to you personally, unless you feel that the replies would be of interest to everyone who reads the newsgroup.
- In electronic mail, be cautious in replying to messages that were sent to more than one subscriber. In some systems, your reply will be sent to each person who received the original -which may include every subscriber.
- Don't cross-post a message (send it to more than one newsgroup), or reply to a cross-posted message, unless you're genuinely following the discussion in each newsgroup and believe your message would prove of interest to readers of each of them.
- If you're posting something that gives away the plot of a movie, novel, or television show, put <SPOILER> at the top of your message. That way, people can skip reading it if they don't want to know whodunnit.
- If you're posting something that some people may find offensive, such as an erotic story, use the command (available with most networks) that encrypts your text so that it looks like garbage characters. (In UseNet, for example, the command rot-13 shifts each letter 13 characters, so that b becomes o.) To read such a message use the command that decrypts the text. Any reader who is offended will have to take responsibility for having decrypted the message. Also, use discretion when "getting personal" with other users. Stalking laws are now being interpreted to encompass e-mail messages.

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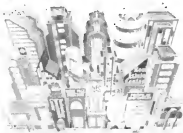


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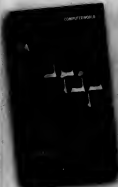
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It's the service, stupid!

Bravo to Craig Stedman and Michael Goldberg in "IBM Ghosts haunt CEO," (CW, March 25) for their tactical mention of declining support at IBM. When I was an IBM Level 2 support representative, IBM meant service. We were trained to answer every question politely, quickly and accurately. By simply recreating this service model at a software start-up, I have been able to exceed 80% customer satisfaction.

Meanwhile, back at IBM, a recent call regarding OS/400 TCP/IP had me on hold for 17 minutes and repeating the same question to dispatchers for 10 minutes. I was finally told that I didn't have the right support contract, which turned out to be untrue. Mr. Gersper should consider that the computer business was service-centric long before it was network-centric. It will remain so now and in the future.

Matthew Conescu
Xpoint Corp.
Norcross, Ga.
mat@conescu.com

Look who's talking

I just completed in Depth 17's OOP right for enterprise IS? CW, March 25). This is what John Strand said: blah, blah, OOP; blah, blah, OOP; blah. At least Martin Goetz had something to say. Maybe Mr. Strand and Sprint Corp. have object-oriented programming technology will in hand.

As a Sprint shareholder, however, Mr. Strand's performance makes me wonder whether we have yet another IS executive who has only the slightest idea about the technologies he's embraced and Sprint is funding.

Howard D. Weiner
The Number Co.
Catharine, Va.
weinerhd@the-number.com

Why pat him on back?

After reading the article "Start-up pitches catalogs" (CW, Feb. 19) about Robert Morris Jr.'s company starting to market catalogs on the Internet, I was more than a little disturbed. This person has become the symbolic father of computer viruses. He is offering Internet services eight years after he submitted his "worm" over [the net].

He has gotten away with a slap on the wrist after he caused many computers around the United States to completely stop functioning. I'm appalled that Computerworld would give this guy recognition for almost destroying our worldwide link.

Andrew Borts
Fort Lauderdale, Fla.
103124.261@compuserve.com



Gadget

IRS waffling is crime

This is in response to both articles on the IRS and its former chief information officer, Henry H. Philcox ("Feds to IRS: Fix project or shut it down" and "Former agency CIO: Give project time" CW, April 1). The IRS has invested (both ac-

tual and projected) \$8 billion in Tax Systems Modernization — \$2.5 billion between 1986 and 1995 alone — and Mr. Philcox believes "any cancellation of the program would be criminal." Mr. Philcox, the fact that the IRS has spent almost \$8 billion to date is criminal.

Scott Haines
Stone Mountain, Ga.

Two points on OS/2

I just read your "Desktops hit disk barrier" article in the April 15 issue. I want to point out that OS/2 can handle drives up to 64G bytes. And, OS/2 can boot from a large (high-performance file system) drive, if it's addressable by the system BIOS.

Steve Yetus
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Servers & PCs

Hitch unit to ship
low-cost Java terminal, 42

Mainframing

Pilot guides HDS into CMOS race

By Michael Goldberg

Pitching its hat into the air-cooled mainframe sides, Hitachi Data Systems Corp. is readying Pilot, its first System/390-compatible machine using CMOS processors.

With the first models due out in October, Pilot's estimated 40 MIPS performance for a uniprocessor machine gives HDS a jump on similar offerings expected from IBM and Amdahl Corp., said Charlie Burns, an analyst at Gartner Group, Inc. in Stamford, Conn.

For users, HDS getting into the CMOS race "is very important for competition," said Dale Perry, director of technology architectures at Bell Sygma, Inc. in Toronto.

"It helps keep the price/performance curve" going down and improves value for information systems managers who want to upgrade their big hardware, Perry said.

HDS officials in Santa Clara, Calif., declined to give specific pricing information for the Pilot series. But Burns said he expects basic configurations to sell for approximately \$12,000 per MIPS.

The Pilot series, based on CMOS chips licensed from IBM, is available in one, two or three-processor models. Models that scale up to 10 processors are slated for sale by December. HDS officials said.

Based on physical size and performance, the Pilot series is the smallest in what HDS calls its Voyager family of enterprise servers. Pilot—taking up between 6.7 and 12.9 sq. ft. of floor space—is

physically smaller than HDS' GX 8000 series and Skyline models and slower in terms of MIPS (see chart).

Easily integrated
Pilot gives HDS "the widest breadth of offerings" among big iron vendors, said Carl Greiner, an analyst at Meta Group, Inc. in Stamford, Conn.

For users,
HDS' getting
into the
CMOS race
"is very
important for
competition."

—Dale Perry,
Bell Sygma

And because HDS machines support IBM's Parallel Sysplex technology for linking mainframes to shared disk storage, users can integrate CMOS-based Pilot with other systems, Greiner added.

While Pilot gives HDS a flexible mainframe lineup, it probably won't dent IBM's commanding market presence, said Ed Carr, an analyst at Aberdeen Group, Inc. in Boston.

He said the systems will appeal mostly to Hitachi customers rather than inspire mass conversions.

As part of the Pilot series announcement, HDS also introduced a new storage array.

The 7750 array subsystem is a fault-tolerant system that supports the RAID 5 standard. It has a capacity of up to 90.8G bytes and has an option for a Windows-based performance monitor.

VLM's memorable performance

By Jaikumar Vijayan

An emerging 64-bit memory technology called Very Large Memory (VLM) is proving quite a hit in the high-end database and large applications markets.

Though it is supported on only a handful of applications and is very expensive to implement, VLM could substantially boost performance in some database and online transaction processing markets, analysts said.

Introduced by Digital Equipment Corp. on its 64-bit TurboLaser series of high-end AlphaServers last year, VLM boosts application performance by increasing the amount of information that can be stored in a system's main memory.

Using VLM, Digital's TurboLasers support up to 14G bytes of main memory, compared with the current limit of 3G bytes for 32-bit technology. With this kind of memory availability, data for an entire application can run directly on main memory instead of on disk drives.

"Some claim that by doing this, it is possible to gain up to 200 times the performance of 32-bit systems," said Terry Shan-

non, editor of "Shannon Knows DEC," a newsletter in Ashland, Mass.

"It allows us to minimize [system] overhead," VLM, page 42

Very Large Memory

What it is: A 64-bit technology that allows servers to support up to 14G bytes of main memory currently and 54G bytes by year's end.

What it is called for: Large databases, data warehousing applications and online transaction processing.

Its advantages: Performance is sped up several-fold because entire applications can run directly on memory.

Its downsides: Very expensive to implement; large applications, databases or operating systems support it.

IBM's PC 750 features offer speed, reliability and low maintenance

By Howard Millman

In a world where wholesale shoppers club display PCs next to lawn furniture and housewares, can even corporate PCs be differentiated?

There are ways. IBM's new high-end corporate offering, the PC 750, has several useful features. One in particular, "Wake on LAN," is truly outstanding. One of IBM's periodic flashes of innovation.

Wake on LAN allows an administrator to remotely turn on a PC 750. Be it down the hall, up the street or across the country, it can be tapped by an information systems manager for software upgrades or numerous other maintenance tasks after hours, when a PC is typically turned

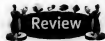
off. Powering down is accomplished via the system's power management settings.

To make Wake on LAN work, the PC 750 includes a specially configured BIOS. IBM makes a version that comes with its new Industry Standard Architecture (ISA) Ethernet adapter, which has auxiliary connectors to the system's power supply and motherboard. Currently, the card works only in the PC 750. For users with Token

Ring networks, the PC 750 has an optional Token Ring adapter.

To test Wake on LAN, we used two PC 750s. Both were based on 166-MHz Pentiums and configured with 16M bytes of RAM, a 1.2G-byte hard drive and a 6X-speed CD-ROM drive. Both

IBM, page 42



Hitachi Data Systems offers three kinds of mainframe technology

Name	Price (approx.)	Why (and a few caveats)
Pilot	Air-cooled CMOS	40
GX 8000	Emitter coupled logic (ECL)	60
Skyline	Advanced CMOS emitter coupled logic	124

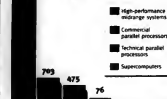
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Source: Gartner Group, Inc., Stamford, Conn.



1993 worldwide high-performance computer market

TOTAL UNITS SHIPPED:
5,404



TOTAL REVENUE: \$3.14B



Source: International Data Corp., Framingham, Mass.

PC 750 is good, except for NetFinity

CONTINUED FROM PAGE 41

machines ran under Windows 95.

The power management system performed reliably. It powered down in progressive stages and reactivated with a mouse click or press of a key.

Wake on LAN comes on all four versions of the PC 750 — a base model and three preconfigured systems. Of the preconfigured boxes, one is targeted at network connectivity; one is aimed at multimedia/telemetry users and one is graphics-intensive.

We tested the graphics system, which includes a Matrox Graphics, Inc. high-performance Millennium graphics card. It has improved greatly from that of earlier IBM PCs, which suffered from inadequate video performance. We saw eye-blink-fast screen refreshes with the help of 4M bytes of Windows RAM (VRAM) in the MPEG-compatible adapter. VRAM is a high-speed type of video RAM developed by Matrox.

The PC 750 includes IBM's network-centric NetFinity management software, which provides alarms, additional security and a single point for network management. Several glitches with NetFinity, however, caused problems in setting up our test network. NetFinity also misbehaved when we ran it simultaneously with other Windows utilities, causing application load failures.

Is managers will be pleased to see that the machine offers multi-level security, including password maintenance, ROM-based pas-

swords, floppy drive write disabling and I/O port access management. As a measure of the system's advanced security, and a concurrent note of caution, the administrator's password is captured in ROM. Should you forget this password, the system board has to be replaced.

Low maintenance

The PC 750 has several features that should help reduce cost of ownership through reduced maintenance costs. The machine is replete with small yet useful features. For example, it has a cover that's easy to remove and re-install, a caddyless (or drawer-less) CD-ROM drive and a Plug-and-Play BIOS that detected and configured every new Plug-and-Play peripheral we tried. For owners who need to reuse ISA legacy adapters, the PC 750 will reserve memory addresses.

The motherboard accepts both single and dual in-line memory modules. Adapter cards mount horizontally on a hybrid vertical riser card that accommodates a mix of five ISA and Peripheral Component Interconnect cards.

We focused our feature assessment on the box's benefits to administrators, but the machine's speed, sharp 15-in. digital monitor and first-rate keyboard should satisfy demanding users. An optional wireless infrared transmitter facilitates data transfers with printers and Infrared Data Association-compliant devices at 1.2M bit/sec.

We simulated various office tasks, including recalculating large spreadsheets, performing graphics operations and playing back multimedia (after adding a

sound card). We distributed the applications locally and on a server, and they ran smoothly. Our system had 256K bytes of Level 2 cache. A 512K-byte version is available, and we recommend it for use with the bundled Lotus ProShare collaboration software.

Aside from our misadventures with NetFinity, our only mingling is the lack of a reset button. It remains a mystery why IBM provides a variety of thoughtful features yet omits a reset. One more caution: If you use these desktop machines as a tower, getting a



disc into the caddyless CD-ROM drive requires nimble fingers.

The combination of performance features and innovation doesn't come cheap. Prices range from \$2,590 for a basic machine without a monitor to \$3,836 for a high-end system with a monitor. As one cost-saver, IBM will ship systems without an operating system if you own a site license.

Milant operates Data Systems Services, a networking and problem-solving consultancy in Croton, N.Y. He can be reached at milant@mcinail.com.

Low-cost Java terminal on tap

By Rob Guth
TOKYO

A unit of computer giant Hitachi Ltd. in September will begin shipping a low-cost terminal for accessing the Internet, a company official confirmed.

Hitachi Software Engineering Co. will release the terminal, tentatively called ED, in Japan. The company hasn't decided whether to offer the unit overseas, the official said.

Base pricing will start at \$542, near the magic \$500 number that has been cited by U.S. vendors in outlining what they think the market will bear. The machine runs DOS and will have a 33/66-MHz 486DX2-class processor. It will include a quad-speed CD-ROM drive and interfaces to connect a Super VGA monitor or television.

"They're trying to play in as many arenas as they can to see which it'll win in," said Steven T. Rone, an analyst at International Data Corp. in Framingham, Mass. "They'll probably put their re-

sources into the winners."

Connectivity will include a 28.8K bit/sec. modem. The SoundBlaster-compatible unit will ship with 8M bytes of RAM and one PC card slot that can take one Type III card or two Type II cards, the company official said.

Users will control the unit through a Hitachi-developed input pad, but the unit will also house ports for a keyboard and mouse, he added.

Hitachi Software Engineering, whose parent company licensed Sun Microsystems, Inc.'s Java programming language earlier this year, will bundle the Hot Java browser with the system, the official said.

Hitachi will sell the unit under its own brand name and to OEM customers. The company's target customers include Internet service providers and companies that can bundle the unit with cable TV services, the official said.

Guth is an IDC News Service correspondent in Tokyo.

VLM

CONTINUED FROM PAGE 41

head and increase response times by showing [some applications] directly to RAM," said Steve Jacobs, president of Vagus Technologies, Inc., a consultancy in Atlanta.

Vagus recently completed a \$15 million centralized reservation system for Best Western International in Phoenix. Based on two AlphaServer 5400s that support 4G bytes of memory and nearly 4G bytes of storage, the reservation system will process 15 million "room-nights" and more than 15 million calls annually.

Analysis said demand for large memory configurations is being driven by the need to manage large amounts of data in open client/server environments. At the same time, they don't expect VLM to be offered as anything more than an option by any vendor besides Digital.

For instance, five years ago a database with 50M bytes of data was considered medium-size, but today's medium-size databases are 5G to 10G bytes. Five years from now they are likely to be up to 100G bytes, according to a report on VLM from Aberdeen

Group, Inc. in Boston.

Some vendors are expected to address this growth by leveraging the larger direct-memory addressing capabilities of emerging 64-bit operating systems and the large memory that is supported on the hardware itself. This will allow users to run an entire application — or most of it — directly on main memory.

Oracle Corp., Informix Corp. and Sybase, Inc. support VLM on their databases, for instance.

Despite the growing popularity of VLM — Digital claims to have sold about 1,500 TurboLaser, most with more than 2G bytes of memory — it is very expensive to implement. For instance, just 1G byte of memory costs about \$100,000.

Similarly, software support on VLM is limited. Currently only Data Universal and OpenVMS operating systems support VLM. Windows NT is expected to have VLM support by next year.

Alternate 64-bit performance boosters could also make it cheaper to achieve nearly the same kind of performance gains as VLM.

"Another way to skin the cat is to make a better channel to get at the data in a disk," said James Gaden, an analyst at Technology Business Research, Inc. in Hampton, N.H.



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3590	→ 9 MBS	→ 18 GB
VHS	→ 6 MBS	→ 7.5 GB
3490	→ 3 MBS	→ 600 MB
MT 4000	→ 1.5 MBS	→ 20 GB

The cost of system time varies from site to site, but a recent study has put the cost of a medium sized PC LAN at **\$18,000 per hour**—and the cost of a UNIX network at **\$30,000 per hour**.* Numbers like that make it easy to understand how a backup/restore solution that can do its job faster can save you serious money.

For example, for a single 40 GB restore, the CY-9000 will save you...

**\$9,000 over 3590,
\$13,500 over VHS,
\$83,100 over 3490, and
\$194,100 over DLT.**

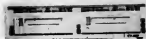
And you won't need to change tapes...

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2 times with DLT, and
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* Savory Market Research

** All drives, except VHS, are available with data compression

LCD screens to rival size of CRT monitors

By Bob Guth
TOKYO

Targeting the desktop market, several Japanese screen-makers this week unveiled LCD panels with display areas and resolutions comparable to those of CRT monitors.

The screen-makers are positioning the displays as stand-alone units in hopes of creating a market for flat-panel displays to replace CRT monitors.

Last year, demand for 10.4-in. thin film transistors (TFT) fell short of expectations. This left major vendors with an oversupply of the screens, which are used primarily in notebook PCs.

Hoping to create other markets for the screens, the vendors began simultaneously cutting prices of the screens and marketing them as monitor replacements.

But while prices for certain screens have plummeted over the past year and a half, most analysts say the displays are still too expensive to lure many customers.

The following are part of the latest round of product announcements:

• NEC Corp. this week began shipping samples of a 14.1-in. active-matrix TFT LCD panel that has a display area equal to that of a 17-in. CRT monitor. The full-color screen is sample priced at \$3,200.

• TFT LCD market leader Sharp Corp. in June will roll out a 13.8-in. unit that features a viewing angle wider than that of most rivals' screens, officials said.

• Flat-panel market newcomer Mitsubishi Electric Corp. announced it will ship a 15.1-in. TFT screen in June.

• Hitachi Ltd. within the next two months will ship a 13.3-in. screen with a wide viewing angle. It will be built into a stand-alone unit and costs approximately \$3,500.

Guth is an IDG News Service correspondent in Tokyo.

SIEMENS ROLM Communications

If we built a \$36 million telecommunications network in the Russian

Briefs

Zenith Data desktop line

Zenith Data Systems has released a family of corporate desktops, the Z-Station LX. The different models use 100, 120 and 133-MHz Intel Corp. Pentium chips. They come with the Peripheral Component Interconnect bus, 16M bytes of RAM, a 1.2G-byte hard disk drive and a 64-bit video card. Pricing starts at \$2,500.

Sun incentives

Sun Microsystems, Inc. began a temporary incentives program aimed at getting customers with rival workstations to switch to the 64-bit Ultra machines it introduced last fall. The incentives are available through June 20 to users with workstations from Hewlett-Packard Co., Silicon Graphics, Inc. and Digital Equipment Corp. Sun is offering trade-in credits on the remaining residual value of the installed machines plus unspecified discounts on its Ultra 1 Model 170E box, which is based on the 64-bit UltraSPARC chip.

Apple sells plant

Apple Computer, Inc. will sell its Fountain, Colo., manufacturing facility. The buyer, contract manufacturer SCI Systems, Inc., will continue to make Macintosh computers for at least three years. Terms of the deal weren't disclosed. Huntville, Ala.-based SCI said it plans to offer work to the majority of the plant's 1,100 employees. The companies expect the deal to be completed in June. The 360,000-sq.-ft. plant is one of Apple's four manufacturing facilities.



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Servers & PCs

New Products

CMS Enhancements, Inc. has introduced Platinum/Portable, a four-speed external CD-ROM drive.

According to the Anaheim, Calif., company, Platinum/Portable gives mobile users the speed, capacity and ease of use necessary for multimedia and CD-ROM presen-

tations. It is a plug-and-play drive that installs in a portable computer's PCMCIA Type II slot. It has a 600K byte/sec. sustained transfer rate and a 256K-byte buffer memory.

Platinum/Portable runs on six AA batteries or through an autowatching 100 to 250 alternating current voltage power supply.

Pricing starts at \$399.

► CMS Enhancements
(714) 517-0915

Rimage Corp. has introduced Perfect Image Automated CD-Recordable (CD-R) Publishing System.

According to the Minneapolis company, the Windows-based system was designed to automate the publishing of multiple unique CD-Rs or to handle large-quantity CD-R recording and printing. It comprises software and an in-line CD-R printer that is connected to an Eastman Kodak Co. Disc Transporter. The software interface dic-

tates the movement of each disc from the recording mechanism to the printer and back to the Kodak Transporter. The Transporter incorporates a two-speed or six-speed recorder and has a 75-disc capacity with automatic load and unload functions.

Pricing for the system starts at \$20,250.

► Rimage

(612) 944-8144

UniPress Software, Inc. has unveiled PowerTerm, a terminal emulator for Windows, Windows 95 and Windows NT.

According to the Edison, N.J., company, PowerTerm links PC desktops to resources, including Unix running on Sun Microsystems, Inc., Hewlett-Packard Co. and Digital Equipment Corp. machines and IBM's AS/400, in order to run current and legacy applications.

Pricing for PowerTerm starts at \$99. A free evaluation version is available at UniPress' home page at http://www.unipress.com/free_eval.

► UniPress Software

(908) 287-2100

Chem USA Corp. has introduced ChemBook 5580, an Intel Corp. Pentium-based notebook computer.

According to the Hayward, Calif., company, ChemBook 5580 features up to 128-MHz performance, full multimedia capabilities, a removable quad-speed CD-ROM and a pipeline burst mode to increase the efficiency of the 256K-byte cache memory.

ChemBook 5580 has a Microsoft Corp. Sound System and Sound Blaster Pro-compatible 16-bit stereo sound system, a choice of processor speeds, 4M to 32M bytes of RAM and a removable 500M-byte, 810M-byte or 1G-byte hard drive. It can function as a multimedia PC or as a desktop PC with the unit's minidocking station adapter.

Pricing for ChemBook 5580 starts at \$2,699.

► Chem USA

(510) 785-8069

Tricond Systems, Inc. has announced PowerFrame ES/166 Enterprise Server.

According to the Plymouth, Minn., company, the system was designed for enterprise environments with high user counts that require high throughput, including groupware, remote access, imaging and on-line analytical processing environments. It supports up to eight Intel Corp. 166-MHz Pentium processors, 860G bytes of storage and 1G byte of memory.

Pricing for a typical configuration starts at \$82,655.

► Tricond Systems

(612) 557-9005

tundra,  imagine what we did for this guy Pete.

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Autodesk aims new products at the World Wide Web, 48

Software

Software

Lawson ware will track costs

By Julia King

Lawson Software in Minneapolis next month will announce a new release of its client/server financial and human resources software.

New features will include an automated workflow engine and an activity-based costing feature that will let users more accurately allocate expenses to individual business operations, such as processing customer service calls.

Costing has traditionally been measured through statistics such as head count and square footage.

Broad pricing scheme

The software will be shipped as three "process suites" that comprise reusable objects rather than traditional software modules.

Pricing, which hasn't been set, will be based on the number of concurrent users involved in a particular business process.

Current pricing, which ranges between \$800,000 and \$1 million for a 100-user license to the full software suite, is based on the number of concurrent users of a module, such as accounts payable.

Applied Biosciences International, Inc., a \$140 million contract research firm in Arlington, Va., will use the Lawson software to track the cost of every hypodermic needle and pair of rubber gloves that big pharmaceutical companies use to test new drugs.

"We're even developing an employee expense entry that will track everything right down to the cost of phone calls made to clients, so their bills will reflect an accurate look at exactly what went into each study," said Steve Bolick, manager of corporate information technology at Applied Biosciences.

Getting a better handle on costs will allow Applied Biosciences to bid more accurately on future research projects, Bolick said.



NOTES 4.0

Notes provides a comprehensive groupware environment. Exchange is targeted at providing a strong messaging platform with some groupware features.



EXCHANGE

Windows, OS/2, Macintosh and numerous Unix types	Server platform supported	Windows NT
Notes databases are updated and synchronized across Notes networks	Architecture	Message-based; public message folders are containers for group interaction
Will ship Simple Mail Transfer Protocol (SMTP) and X.400 native message transfer agents by midyear	Messaging support	Includes SMTP and X.400 connectors. Requires special connectors that allow Exchange servers to communicate
Full application development platform with LotusScript scripting language	Development environment	Forms designer for basic applications
Will add integrated scheduling this summer in Notes 4.2	Group scheduling	Integrates with Schedule+
Synchronous process; both servers speak to each other at the same time	Replication	Message-based, store and forward updates
Notes/View add-on, can be integrated with HP's OpenView systems management software	Administration	Linked to Windows NT Server's administration capabilities

Clashed mail titans fizzles

By Tim O'Donnell

The battle may be over before it's begun.

The much-anticipated messaging/groupware contest between Microsoft Corp.'s Exchange and Lotus Development Corp.'s Notes 4.0 may never come to pass, mostly because most users will stay with what they know. In other words, Microsoft Mail users will probably switch to Exchange, and Notes users will likely upgrade to the next version of their environment.

On the other hand, there are already differences between Notes and Exchange that users might need both, even at the same time, analysts said. "You may want both platforms—Exchange for messag-

ing and Notes for collaboration," said Jerry Rives, a principal at Bayport Communications, Inc., a consulting firm in Roswell, Ga.

Mail postchases

Exchange is Microsoft's new messaging software built on the administration capabilities of Windows NT Server, with additional groupware features built in. Notes is Lotus' long-standing groupware software that now includes a strong messaging component in the mix (see chart).

And there are options other than Exchange and Notes. Novell, Inc., plans to ship its groupware server-side later this year, and Hewlett-Packard Co. will add groupware features to its OpenMail messaging backbone software.

Lotus and Microsoft have already

lured some high-profile customers to switch from the rival camp, and will inevitably notice some (C/W, April 1). But this will likely be the exception rather than the rule, observers said.

"What it comes down to is they both do all the usual mail things. Many people will make the choice based on what they are doing now," said Jeff Field, a partner at Ernst & Young's Technology Services Practice in New York. The firm tested Exchange and Notes for messaging but chose Notes because the company already runs the groupware.

Early Exchange users said they enjoy the improved administration, reliable message delivery and handy message throughput vs. what had been in Mail.

"We are looking forward to the Notes vs. Exchange, page 48

Briefs

CA to back bar coding

Computer Associates International, Inc. is adding support for two-dimensional bar coding technologies from Symbol Technologies, Inc. to its client/server-based financial and distribution applications. CA Warehouse Rite and CA Masterpiece/2000 are among the applications to receive the support, which will let CA clients incorporate database information in product bar codes.

IBM to port to Unix

IBM plans to port its new integrated software servers to the HP-UX and Solaris operating systems, but delivery isn't likely until next year, said Steve Mills, general manager of the Software Solutions division. Introduced last month, the IBM Software Servers initially support OS/2, AIX and Windows NT. IBM's MQSeries middleware will also be added to the server family eventually, Mills said.

PeopleSoft integrates

PeopleSoft, Inc. in Pleasanton, Calif., said it will integrate several vendors' on-line analytical processing tools (OLAP) into its suite of client/server software by year's end. The following OLAP products were included in the announcement: Cognac Corp.'s PowerPlay software, which PeopleSoft will deliver with all of its application packages; Business Object, Inc.'s query and reporting tools; Arbor Software Corp.'s Enterprise database server; and Platinum Technology, Inc.'s InfoBase

and Repository software. PeopleSoft also said it will publish a programming interface that lets additional OLAP vendors integrate their products with the firm's client/server applications.

OLAP group spurs dispute

The OLAP Council, a Boston-based industry group, has released a benchmark that it says measures the performance of OLAP servers. Council spokesman Rick Crandall said the Analytical Processing Benchmark 1 is precise enough to permit servers from various OLAP vendors to be evaluated on a variety of hardware platforms. Meta Group, Inc., a research firm in Westport, Conn., disagreed, calling it "a red herring providing no value to our user clients... a marketing play to prove that OLAP must be implemented by a physical multidimensional server."

DEC/VME gateway

Users of Digital Equipment Corp.'s AlphaServer systems now have a gateway to information contained on IBM mainframes. The Maynard, Mass.-based company last week announced an agreement with data management firm Encore Computer Corp., under which the two companies will jointly market Encore's Infinity Gateway. With it, AlphaServer users can read IBM and compatible mainframe data as if it is located on local disks. The products are available immediately and cost about \$80,000.

Software

Autodesk jumps on World Wide Web wagon

By Lisa Piccirilli

Like almost every other software developer on the planet, Autodesk, Inc. has announced products that play to the popularity of the World Wide Web.

Officials at the San Rafael, Calif., software developer last week said they want the company to gain recognition beyond the sphere of its flagship AutoCAD product.

To that end, Autodesk is unveiling a browser for two-dimensional graphics and a three-dimensional Web authoring tool. Whip is a Web browser plug-in that lets users dynamically view 2-D vector designs—diagrams and illustrations—that have been stored on the Web in the Whip file format.

With Whip, users can view these designs regardless of what application was used to create them. A prototype of the plug-in can be downloaded for free from Autodesk's Web site. The final version isn't due until fall.

Multimedia division

Autodesk also announced it has spun out its multimedia group. The new division, called Kinetic, announced the availability of a prototype Web authoring tool, HyperWire, available for free at www.autodesk.com, lets users create 2-D and 3-D Web pages. The program uses graphical objects that can be inserted and built up and doesn't require users to understand complex programming languages.

Based on Sun Microsystems, Inc.'s Java programming language, HyperWire incorporates Virtual Reality Modeling Language and Virtual Reality Behavior Language to

allow users to create 2-D and 3-D models. The final version is due this summer, according to a spokeswoman for Autodesk.

"Because it's a graphical editing environment for both [Hypertext Markup Language] and Java, it makes it easier for a whole lot more people to edit Web pages," said Louis Cantle, executive vice president of Westwood Studios, Inc. in Las Vegas.

The entertainment software publisher beta-tested HyperWire. "You don't have to be a programmer, and there are a lot of advantages because now you can have artists and designers working directly with creative people working directly with the Web pages," he said.

Autodesk plans to incorporate the HyperWire tools in its forthcoming 3D Studio Max design product, due by the end of the month.

But two longtime 3D Studio users who are also beta-testing 3D Studio Max said they aren't interested in the Web authoring features in the new version. "I don't have time for messing around on the Internet," said Alan Igrizian, president of Alan Igrizian Design in Encinitas, Calif. "As an artist, I am concerned with producing 3-D imagery and animation for the entertainment industry, and messing around on the Web is not something I'm doing right now."

Greg Tadias, an animator at Blue Studio, Inc., a computer animation firm in Venice, Calif., agreed. "These features are not of interest to me personally," said Tadias, who does animation and special effects for movies and television. "But for people who want to put up 3-D Web pages that show some catchy 3-D objects, this is definitely the next step in where things are going."

Greg Tadias, an animator at Blue Studio, Inc., a computer animation firm in Venice, Calif., agreed. "These features are not of interest to me personally," said Tadias, who does animation and special effects for movies and television. "But for people who want to put up 3-D Web pages that show some catchy 3-D objects, this is definitely the next step in where things are going."

want to automate their business processes.

For example, users who seek basic routing and forms features most likely won't want the full groupware development environment that Notes offers. But companies that need strong intra- and interenterprise collaboration applications may want the better security and higher-level application capabilities in Notes.

Notes offers an extensive application development environment and more database-supported groupware features than Exchange does. Instead of using messages to route and maintain information, Notes relies on replicated Notes databases that give users access to the data.

Both companies promise support for the Post Office Protocol-3 and Internet Messaging Access Protocol-4 Internet standards on their client software.

Notes vs. Exchange

CONTINUED FROM PAGE 47

central administration and to Microsoft's new directory synchronization," said Karen Alvarado, network operations manager at Electronic Arts, Inc. in San Mateo, Calif. Electronic Arts, which uses Mail, will roll out the Exchange client first to its end users and then add Exchange servers.

"Exchange is going to save us in distribution time and should reduce network traffic" with its product's replication scheme, Alvarado said.

Options differ on how many collaboration-related features Exchange offers compared with Notes. Often, the degree of collaboration depends on how much users

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New Products

Dual/Vis, Inc. has introduced MacOpener 2.0 for Windows, a utility for Windows 3.1, Windows 95 and Windows NT.

According to the Trumbull, Conn., company, MacOpener 2.0 lets Windows users directly access Macintosh disks, including high-density floppy disks, removable cartridges, hard disks and CD-ROMs, from anywhere on their PCs.

MacOpener 2.0 includes MacOpener Driver, a feature that lets Windows users view and format Macintosh disks in their PCs as if they were PC disks.

It also includes a file navigator—a File Manager-like interface that lets users preview Macintosh text and graphic files.

Pricing for MacOpener 2.0 for Windows starts at \$49.

► DataVis
(203) 268-0030

Veritas Software Corp. has introduced VxSmartSync, a recovery accelerator designed for mirrored Oracle CDB databases.

According to the Mountain View, Calif., company, VxSmartSync reduces the time and system overhead required to recover from unplanned system failure for Oracle applications that use mirrored databases.

VxSmartSync lets the Oracle database engine manage the recovery/synchronization process, requiring only the data known by Oracle to be "dirty" at the time the system failed.

Pricing for VxSmartSync starts at \$495 for a single server license.

More information about the product is available through Veritas Software's home page at <http://www.veritas.com/>.

► Veritas Software
(415) 335-8000

Performance Software, Inc. has introduced Masterfile, a conversion tool.

According to the Richmond, Va., company, Masterfile is a help authoring system that converts Ventura Publisher documents into Microsoft Corp. Word or FrameMaker Windows Help files.

Masterfile analyzes Ventura pub files and converts all the Ventura tags into Word or FrameMaker styles.

Masterfile provides seamless conversion for tables, frames, cross references, index entries and side-by-side paragraphs. Pricing for Masterfile starts at \$495.

► Performance Software
(804) 794-1012

Visio extends reach of graphical tools

By Lisa Picarile

Visio Corp. is trying to entice customers into standardizing on its graphics packages throughout the enterprise. To help them do that, the company has announced deals with other software vendors and has a new library of shapes and third-party tools.

The company's attempt to extend the appeal of Visio 4.0, its Windows-based diagramming and business flowcharting package, is based on users' increasing need for a standard platform to create and share graphics, according to officials at the Seattle company.

For example, Chrysler Corp. is using Visio as a way to annotate photographs of nonconforming or defective parts, according to Ke-

vin Halligan, a technical consultant at Chrysler Information Systems in Custer, Mich.

"In the past, we had nine different applications working together," he said. "Now we have consolidated everything into one—Visio. We can show where and what the problems are. You know the old saying: A picture is worth a thousand words."

To help establish its Visio product as a platform, the vendor announced Visio Solutions Li-

Flowcharting

brary, which includes the company's entire library of diagramming shapes, examples of practical applications of Visio technology in business-process management, architecture, manufacturing, engineering, insurance and law; and tools from third-party developers.

In development

Visio earlier this month signed a licensing agreement with SAP AG. The two companies will jointly develop tools that will let users graphically display process models in the SAP R/3 system. SAP software currently forces users to configure systems by using SAP tables.

The Solutions Library will be available at the end of the second quarter via the Internet.

The company also announced it has established a program to partner with independent software vendors, value-added resellers, resellers and systems integrators to help foster the development of software implementations

based on Visio.

Michael Pinckney, an analyst at Gartner Group, Inc., a market research firm in Stamford, Conn., said that although Visio is taking concrete steps to broaden the usage of its products throughout the enterprise, it hasn't yet fully articulated a clear position on the product's potential uses.

But Pinckney also said the company's new strategy is sound and that users will be attracted to the money-saving potential of Visio 4.0.

Halligan claims that Chrysler's application built on Visio, the latest implementation of any application in the automaker's history, has saved an "average of 34 million per quarter and cut hours, days and even weeks" off the process of resolving problems with defective parts.

Attendees are caught in eye of product storm

By Dan Richman

It rained product announcements at DB/Expo '96 in San Francisco earlier this month. And rain showed the city, too, though that didn't stop about 30,000 people from attending the week-long conference and exposition.

Announcements centered around middleware, warehousing and the Internet.

Sybase, Inc. in Emeryville, Calif., was the biggest rainmaker, announcing 10 products.

By the end of the year, Sybase will ship software that replicates data to or from mainframe-based DMS, DB2 and VSAM to Sybase databases. Until now, those often-vital corporate data sources couldn't be included within Sybase replication schemes.

Reder environment

Version 1.1 of Sybase's Open Client and Open Server add support for four directory services and four security services to those application programming interfaces. Directory services let users transparently access applications anywhere on a network.

Security services add standardized password and file protection.

David Nyland, vice president of product development at Archipel Systems Corp., a Toronto software vendor to telephone companies, said his clients want World Wide Web sites. But they are afraid that letting customers ac-

cess their databases "might end up with the public giving information. These security services will help prevent that," he said.

A single read/write gateway product, called DirectConnect, replaces the two lines of gateways Sybase has maintained since it acquired middleware specialist Micro Decisionware, Inc. (MDI).

DirectConnect includes graphical system management features that neither Sybase nor MDI's gateway software had.

Gateways allow the flow of information among multiple vendors' database management systems and file systems.

"We want to access DB2 and other, correlational data from the same front ends we access Sybase data with," said Jeff Biddle, a database administrator at American General Life & Accident Corp. in Nashville. "Right now, we're using [Information Builders, Inc.'s] EDA/SQL, but it's a big and slow. We hope Sybase's connectivity will be better."

Managing change

In the realm of data warehousing, Prism Solutions, Inc. in Sunnyvale, Calif., expanded its line of data extraction and transformation tools with Change Manager. This is an \$80,000 product that primarily upgrades warehouse data from mainframe DB2 or IMS data sources. Versions are promised by the end of the year for Oracle

Corp. and Tandem Computers, Inc.

Change Manager is priced compared with similar products, such as the \$30,000 product-update option to PowerMart from Informatica Corp. in Menlo Park, Calif. Prism justifies its price with claims that it is a stronger, more robust product.

In the Internet arena, startup Netfield, Inc. in Foster City, Calif., offered attendees a sneak preview of Web Workshop, a de-

velopment environment for creating intranet applications.

Netfield's trait is openness. It won't offer browsers, servers or scripting languages, said CEO Robert C. Bok. Rather, it will work with any of those products from any major vendor, providing an environment for building, debugging, testing, distributing and maintaining applications.

Set to ship by year-end, Web Workshop will cost \$3,995 per development seat.

IQ object tools now 'net-ready

If three-tiered architectures are good, the Internet is better.

That's the philosophy behind IQ Software Corp.'s recent announcement that it will add Internet capabilities to its family of object-oriented query and reporting tools.

The company's IQ/LiveWeb is based on IQ's SmartServer, a Unix or Windows NT-based application server that provides access to SQL databases, performs queries and produces reports that can be accessed by client devices such as PCs.

When it is released in May, IQ/LiveWeb will be able to produce output in Hypertext Markup Language and Portable Document Format for viewing by

World Wide Web browsers.

IQ, based in Norcross, Ga., plans to release next month IQ/CyberLink, which will let developers create links among documents that are generated using

IQ/Objects (the firm's client-side query and report-generation tool) as well as to other applications or documents. IQ/LiveWeb will range from \$6,000 for Windows NT and low-end Unix servers to \$30,000 for high-end Unix platforms, according to IQ officials.

It will include IQ/SmartServer, IQ/Objects and IQ/CyberLink. IQ/CyberLink also will be sold as an add-on to IQ/Objects; the add-on will cost \$99 per desktop. — Robert Schier



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Every week, Sedgwick loads the latest casualty claims data from the nation's leading insurance carriers into a FOCUS database resident on its RS/6000 distributed network. The database is then accessed via the PepsiCo wide area network by more than fifty desktops and remote laptops equipped with the INFORM risk management system. Both the RS/6000 and local PCs are enabled with Information Builders' EDA/SQL middleware providing PepsiCo managers

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Firms follow less costly data mart route

By Dan Richman

Companies that can't stomach spending years and millions of dollars to create a data warehouse are turning to a quicker, less expensive and less robust alternative: the data mart. But while vendors introduce products to create this modest version of a warehouse, one analyst warned that the species can mutate out of control.

Unlike data warehouses, data marts often can be created in three to six months and for less than \$100,000. They don't do everything data warehouses do — that is, house all of a company's data for querying by masses of

end users — but they aren't meant to. Usually they host a small, cleaned-up, summarized data set pertaining to one product, process or topic intended for a small group of users.

"I agree with using a warehouse for correlating data throughout a company, but those projects have a low rate of success so far," said Parvett Chaddha, president of Cybercom Partners, Inc., a database consultancy in Menlo Park, Calif. "I'm seeing a preference among users for wanting to break data into smaller chunks throughout the company."

One pitfall to watch for is lack of scalability in data marts, warned

Wayne Eckerson, a senior consultant at Patricia Seybold Group in Boston. If data marts grow beyond the storage or performance limits of the technology used to create and house them, they may require costly rehosting.

Disconnected data

Another risk is that data marts will multiply within a company's departments, each different enough in function and format to create nonconnectable islands of information. Appointing an overseer to ensure uniform design can minimize this problem, Eckerson said.

Data marts are created the same way as data warehouses.

Once the mart has been designed, data is copied from one or more operational databases into a single database optimized for querying. Along the way, the data is reformatted to its target, if necessary. It is also transformed so that it is easier for end users to use, which can involve summarizing and subtotaling. Then it is accessed through query tools. It is updated periodically.

San Diego Gas &

Electric Co., a California utility, wants to build one data mart to centralize marketing information and another to house all data related to its power plants. The challenge, said manager Chris Baker, is to ease the process of extracting, transforming and integrating data from three sources: Microsoft Corp.'s SQL Server under Windows NT, Sybase, Inc.'s SQL Server under AIX and IBM's IMS/DB2 and VSAM under VMS.

"We would normally have to write Cobol code to do the transformation from the mainframe and C code to come from Unix," Baker said. Instead, the utility uses PowerMart from Informatica Corp., a Menlo Park, Calif. company that earlier this month announced its PowerMart suite. The \$45,000 package lets users design data marts, extract information data and, through a \$20,000 option, automate periodic updates. PowerMart will let one person do what used to require four people, Baker said.

PowerMart is similar to products from several other vendors, including Warehouse Manager from Prism Solutions, Inc. in Sunnyvale, Calif.; Passport from Carleton Corp. in Burlington, Mass.; Extract from Evolutionary Technologies, Inc. in Austin, Texas; and InfoPump and InfoHub from Trinitic Corp. in Palo Alto, Calif.

Warehouse vendors lured

Such is the lure of this market that vendors that specialize in warehouses are also moving down into the data mart market:

- IBM in Armonk, N.Y., offers a \$31,000 package that includes its OS/2-based "Visual Warehouse modeling, extraction and transformation tool; an OS/2 DB2 relational database management system; a query tool; and consulting."

- A pricier offering is available from NCR Corp. in Dayton, Ohio, which last month announced Scalable Data Warehouse. It features a Teradata-based RDBMS and a WorldMark server. It promises a "working" data mart within 90 days, starting at \$200,000. The additional cost is justified, a spokeswoman said, by the guarantee that the data mart will be scalable into a data warehouse if necessary.

— Dan Richman

Specialty shops

Data marts are scaled-down versions of data warehouses, users and analysts agree

	Size	Often less than 25G bytes	Up to 1T byte
Use	For single use such as marketing or sales, or pertaining to a single item, such as sales of women's clothing in a department store	For all queries	
Initiated	By department heads	By top management or IS	
Accessible	Only to certain users	To all relevant users	
Time it takes to create	Three to six months	One to two years	
Price	Less than \$50,000	Several million dollars	

Sartaj Kidwai

Time for a recompile

Here they go again. Java is hot, hot, hot. If you thought Cobol was a disaster, think again. Soon, C++ will be out, too. Where will this madness stop? It's time we demand a quality compiler language — let the vendors fight out who has the best.

Having a variety of languages may have benefits, but it makes operational issues very complex. It limits hardware, network, operating system and programming choices and creates upheaval for programmers and IS managers alike.

Why retain the whole world for the sake of efficiency, especially if when there's an abundance of cheap memory, disk space and high-performance CPUs? We might as well go back to programming in assembly if efficiency is that critical.

With all these changes, how the cost or the time to develop the systems gone down? Is the code less complex? We forget that the old systems required more time to analyze, develop and implement because of the many systems with which they interacted.

The new PC systems require little interaction.

Further, the old systems handled large volumes of data and had to compete for CPU time; the new systems handle small sets of data, mainly queries, and run on sparsely populated new machines such as the RS/6000.

Problems come back

As the number of newly written object-oriented programming (OOP) systems grows, and the pressure on scarce hardware resources increases, the old problems will resurface. If you thought "spaghetti code" was bad, wait till you maintain OOP systems that have produced "Cheerios code" — scattered around different events and procedures — written by inexperienced programmers.

Think of the waste of having to buy new software, retrain and redo systems with the introduction of each new compiler language. There has been very little

progress in compiler languages during the supposed client/server software revolution.

Progress should mean the following:

- Easy conversion. There should be tools to convert old software to new, without having to recode — Cobol to Visual Basic, for example.
- Robustness. No general protection faults.
- Stability. No frequent overflows.
- True portability. The same code should work on Windows 3.1, Windows 95, Windows NT and OS/2. The compiler, not the programmer, should do the translation.
- Shorter learning curve without spending a fortune on training.
- With today's products, one could spend \$1,500 to \$4,500 per student per class to learn a product that costs \$185 to \$3,000.
- Free technical support. A well-documented, robust and stable product shouldn't require technical support. If it does, the support

should be available free of charge on uncrowded telephone lines.

- Shorter development time. The general perception was that it took too long to develop new applications in the old languages and that the OOP systems would be more efficient. If it's a new language lived up to that claim.

- Easy maintenance. A new language must fix bugs more easily than past languages — for example, have more powerful debuggers.

Imagine a new type of road or gas required for every new type of car. Would you buy one? It's time that an organization such as the American National Standards Institute be established to standardize a compiler language.

Kidwai is president of Anchor Software, Inc., a client/server consulting, custom software and training firm in Raleigh, N.C. He can be reached at 703.333.3030 or computer@compuserve.com.

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The Enterprise Network

BindView's Windows support praised

Users less impressed by its multiplatform extension

By Patrick Dryden

After three years of effort, BindView Development Corp. in Houston is ready to replace its

mainframe software. Beta testers of the next generation of BindView, a popular tool dedicated to maintaining Novell, Inc. NetWare environments, said they are more impressed by its Windows control console than its modular, multiplatform extensions.

BindView Enterprise Management System (EMS), slated to ship next month, provides

greater management flexibility through support beyond NetWare to Windows NT and eventually other servers. BindView EMS combines a common database; a Windows-based, object-oriented console; and a layered architecture to support multiple platforms and management tools.

"The big deal here is real Windows support," said beta tester Mike White, a senior systems engineer at the Calgary, Alberta, branch of Microsoft Computer Centers, Inc. "Users get the Windows console they've wanted, with no excellent built-in report genera-

tor to handle very fancy and creative analysis of their network."

A new Scope feature lets users limit the focus of their analysis and reporting. "That improves performance and provides a multicommunicating,

as large support groups can continue operations for each operator," White said.

Such console configurations appeal to BindView user Dave Gorick, a systems programmer at New York's Yeshiva University in DeKalb. "We would like to set up different views of the console's information — one

for our central server support and another for local administrators, who are more concerned with the workstations," he said. But Gorick said he wishes that in taking a multi-server operating system to reduce the vendor had embraced Unix before NT.

Outgoing edge:

The Windows console is a breakthrough for BindView users because it installs easily and simplifies management, said J. Darin Hansen, a senior consultant at Connat, Inc. in San Valley, Calif.

He reported only minor bugs when testing the NetWare 4.0 module with BindView EMS. "The next servers and tools will

playback on this launching changes with only minor changes in focus," Hansen said. The goal of this object-oriented overhaul is to enable BindView EMS to support any servers, stations or type of information and to let users apply generic data analysis and management tools, said BindView President Eric Polinski.

BindView EMS is slated to ship May 15. It will cost \$65 per console operator. The first administrative module supports NetWare 4.x; one for NT servers and workstations will follow in June. Price varies by network size and configuration; the module for a typical 100-user NetWare network costs about \$2,500, Polinski said.

Following on heels of Cabletron, Cisco offers an ATM alternative

By Bob Wallace

Even vendors admit that the near-term future of Asynchronous Transfer Mode (ATM) networking looks bleak. So they are bowing to user demands and offering ATM-like alternatives for high-speed switching.

Cisco Systems, Inc., like most internetworking vendors, has pushed ATM hard. But it recently followed competitor Cabletron Systems, Inc. and unveiled robust switching software for users who have pushed ATM plans into the distant future.

ATM is an advanced, and slowly emerging, switching technology for simultaneous voice, data and video traffic at speeds of up to 622M bit/sec. But ATM is based on incomplete standards and migration to the technology is expensive, due in part to hardware upgrades.

The alternative is to install the new breed of high-speed switching software on users' existing Cisco routers or Cabletron hubs.

Cisco's ATM alternative, NetFlow, will initially work with Cisco high-end routers. It will be available in the second quarter for \$5,000.

Benefits of Cisco's NetFlow

- Controls access to data on corporate networks more efficiently than existing switching schemes

- Supports numerous existing and emerging applications with different priorities and response time demands

- Provides more detailed traffic statistics for routing networks

"The pain for users is in the learning curve of managing and designing an ATM network," said Eric Hedin, an analyst at The Yankee Group, Inc., a consulting and research firm in Boston. "Operational costs are typically 40% to 50% of a total [network] budget. That's why ATM alternatives like NetFlow make perfect sense."

One ATM benefit lacking in these alternative approaches is robust support for voice traffic. Nevertheless, users expressed strong interest in ATM switching alternatives.

"NetFlow sounds quite interesting. We just don't feel comfortable moving lock, stock and barrel to ATM because the technology is so fluid," said Bill Horst, chief of the U.S. General Services Administration's communications branch in Philadelphia.

But he said San Jose, Calif.-based Cisco is sending mixed messages about ATM. "Since we're already working with Cisco on an ATM project, we'd have to be shown that NetFlow dovetails with the grand ATM plan that they've been talking about for some time now," he said.

Cisco only recently

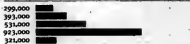
Cisco, page 59.



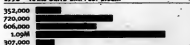
Server operating systems unit shipments

OS/2 Windows Unix NetWare Other

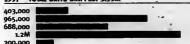
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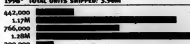
1996* TOTAL UNITS SHIPPED: 3.00M



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New Products

Shiva Corp. has unveiled ShiroS 4.0, software for its family of remote access servers, including the LanRouter, LanRouter/Plus, WebRouter and NetModem/E product lines.

According to the Bedford, Mass., company, ShiroS 4.0 adds Integrated Services Digital Network (ISDN) capability to Shiva remote access products, allowing the management of analog and ISDN multiprotocol access to private LANs, intranets and internets within one platform. It was designed to improve performance, simplify ISDN installation and control wide-area network costs.

ShiroS 4.0 provides IP dial-out, which lets Internet users in TCP/IP-only environments take advantage of software that redirects PC communications ports to LanRouter-attached modems. It also lets Shiva remote access servers be managed from IP: IPX, AppleTalk or command shell environments.

Pricing for ShiroS 4.0 starts at \$499.

► Shiva
(617) 270-6300

Offcom USA, Inc. has introduced the Token Ring PCI/16/4, a Peripheral Component Interconnect adapter card.

According to the Dallas company, the new product is a second-generation card that supports the Dedicated Token Ring standard. It dramatically increases network performance in switched Token Ring environments. The adapter is fully compatible with IBM Token Ring standards, provides plug-and-play installation and complies with relevant industry standards.

The adapter was designed for servers and clients running multi-tasking operating systems including Windows 95 and NT and OS/2. Pricing starts at \$325.

► Offcom USA
(214) 423-7660

Thique Systems Corp. has announced InfoLink, a product for mobile PCs.

According to the North Hollywood, Calif., company, InfoLink lets remote users access, view, download and print information from corporate headquarters while offline.

InfoLink rebuilds Hypertext Markup Language indexes on each user's laptop each time new information is sent. It includes file distribution capabilities and permits automatic scheduling of events and remote diagnostics.

Pricing for InfoLink starts at \$2,580.

► Thique Systems
(818) 752-1350

Lantronix Corp. has rolled out the LMRMTA and LMRSTA, two 10Base-T mini-hub/repeaters. LMRMTA is a four-port repeater, and LMRSTA is an eight-port repeater.

According to the Irvine, Calif., company, LMRMTA was designed for small, stand-alone networks or for adding ports to a 10Base-T connection. LMRSTA can build a stand-alone 10Base-T network or connect 10Base-T users to Tokennet or Thinnet segments. LMRMTA has eight ports, an attachment unit interface port, a baby "N" connector port and a 10Base-T port for cascading repeaters.

Both repeaters feature external power supplies. LMRMTA costs \$125. LMRSTA costs \$195.

► Lantronix
(714) 453-3990

Cisco's move may not have come quick enough for some customers who are intrigued by Cabletron's effort. One longtime Cisco customer already has begun beta-testing Cabletron's SecureFast Virtual Networking, a switch-based ATM alternative (ENR, April 11).

"We find Cabletron's... scheme more attractive than anything Cisco could come up with, because the Cabletron approach builds routing into the switches," says James Wierdel, director of networking at the University of Southern California in Los Angeles. "With SecureFast, our professors with laptops can move from the classroom to anywhere on campus, plug in to the network and have the same networking privileges."

Sales force automation package goes wireless

By Mindy Blodgett

Data Systems Support (DSS) has enhanced its sales force automation software to offer wireless access for mobile users.

DSS makes Sales Information Response System (SIRS), a top-tier software system. The upgraded software is aimed at users with wireless PC cards and laptops—a growing segment of the market.

Adding wireless access is an enhancement some users said will offer a connection when dial-up isn't practical.

Positive reaction

"I think it's an exciting development," said Richard Zuckerman, president of G & Z Systems, Inc., a custom software developer in Hawthorne, N.Y. "Wireless access has a lot of possibilities."

Judith Hodges, an analyst at International Data Corp. in Framingham, Mass., said DSS is one of the first sales force automa-

Sales Information Response System (SIRS)/server software features:

- ✓ RAM Mobile Data and Oracle Mobile Agents, to offer wireless access to sales and marketing information
- ✓ Unix, Windows 95 and Windows NT support
- ✓ SQL connectivity to relational databases, including Oracle, Informix and Sybase

tion software providers to offer this feature.

The technology is intriguing because it lets people need information constantly. They are on the go, and they need instantaneous access when closing a sale," Hodges said.

DSS, based in New York, added wireless connectivity by integrating Oracle Corp.'s Oracle Mobile Agents into the Remote Host Connectivity module of SIRS. Oracle Mobile Agents packages information for more efficient data transfer over wireless networks.

The SIRS Remote module currently supports data synchronization over RAM Mobile Data's wireless network.

DSS officials said the software soon will work with other wireless networks, including Cellular Digital Packet Data.

The Oracle Mobile Agents component for SIRS is available now and costs \$750 for the gatekeeper software for the server.

Users also are charged \$200 per laptop for agent and communication software and an annual licensing fee of \$900 to \$1,200.

Briefs

Seagate adds backup module for Exchange

Seagate Software's Storage Management Group this month will ship a backup module and backup agent designed for use with Microsoft Corp.'s Exchange Server. Using the new product, network managers can schedule backups for Exchange Server at the same time as regular backups. The backup module, which sells for \$600 per backup server, was designed for use with Seagate Backup Exec for Windows NT. The backup agent, which costs \$995 per Exchange Server, works with Seagate Backup Director and Seagate Storage Manager.

Banyan talks Intranet

Banyan Systems, Inc. is licensing its StreetTalk directory services to Software.com, a maker of Internet mail servers. The deal aims to fill a hole in Intranet technology—the lack of a proven electronic-mail directory to simplify administration and routing of messages enterprise-wide. Software.com is Santa Barbara, Calif., will in-

corporate StreetTalk's directory features in its PostOffice 3.0 Internet mail server software, due later this year.

Ericsson adds middleware

Reflexware, Inc. announced a middleware platform aimed at easing wireless E-mail and file sharing. The Virtual Office file/server software package will give users wireless access to corporate, group and public information services. The package can be used with wireless or hardwired communications networks or with TCP/IP or LAN/WAN connections. The software, which hasn't been priced, was designed for the Windows 95 and NT operating systems.

Nationwide ATM deal

Telecommunications systems vendor TeleSoft Corp. in Phoenix made deals with Cisco Systems, Inc. and LDCB Worldwide to build a nationwide Asynchronous Transfer Mode (ATM) network to give users high-speed access to the Internet. TeleSoft said it will begin its ATM deployment through main network hubs in Washington, Chicago, Phoenix and San Jose, Calif., with others added based on demand.

Cisco outlines VLAN strategy

Cisco Systems, Inc. detailed some of its virtual LAN (VLAN) strategy, which carries the technology into 1998. VLANs are logical rather than physical LANs. The vendor's plans will initially give IS managers the ability to move costly data and the ongoing reduction of workstations in the network and the bandwidth allocated to each server. Support for campuswide VLANs and automated change management is due later this year and into next year. Soon after, Cisco will provide IS managers the tools to create VLANs based on "policies," which are privileges set on a per-user, or per-group, basis.

New IBM switch

IBM introduced a faster version of the switch that routes traffic within its RS/6000 SP parallel processor. The new SP Switch transfers data at rates of up to 100MB/sec., double the previous maximum, IBM said. The switch hardware also includes redundant fans and power supplies. Maintenance pricing was cut in half to \$420 a month. The price of the switch remains the same: \$70,000 for a full 16-port configuration.

Cisco

CONTINUED FROM PAGE 57

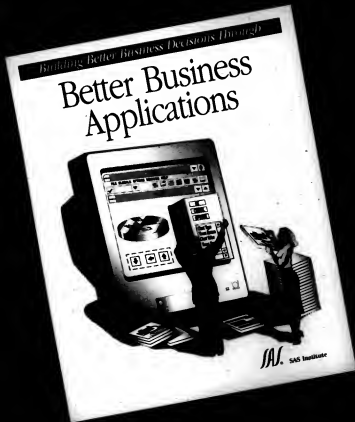
switched course. CEO John Chambers said the company considered pushing ATM harder but ran into customer opposition.

"I've been really sure that we needed to move at a much faster pace to ATM at the workgroup level and at the desktop," Chambers said. "We spoke with two large customers—defense and aerospace—and were told no. [They wanted] routing with a combination of switching."



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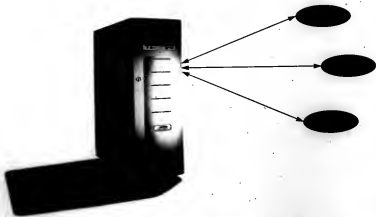
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(Pro) will let users compare their Web site traffic with other sites, 66

The Internet

The Internet

New E-mail technology lets businesses customize distribution of marketing messages

Avoiding spam slam

By Tim Ouellette

Businesses are starting to exploit electronic technologies to send marketing messages and updates to their online customers while avoiding the dreaded "spamming" label.

Last week, Online Computer Market, Inc. started shipping DirectChoice, software that lets businesses build World Wide Web pages that automatically send E-mail notices when the Web page is changed or updated. Messages are sent only to registered users who request updates on various topics.

The E-mail messages can range from notification of special promotions and discounts to news updates. Either way, the readers avoid the reviled shotgun approach to Internet advertising known as "spamming." DirectChoice costs \$995 per Web server.

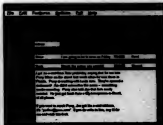
Another option is a package called Bulletins from First Floor Software in Mountain View, Calif. This package requires that users have special low-cost Web site marketing software to get automatic updates from Web sites they want to monitor.

"It is recognition of an important trend toward more personalized distribution of information," said Geoffrey Bock, an analyst at Patricia Seybold Group in Boston.

"In this case, marketing can more tightly focus on who they want to reach" without angering users with unsolicited advertisements, he said.

DirectChoice "really allows users to control the filtering by updating their profile at any time," said Chris Joe, channel communications manager at Banyan Systems, Inc. The Westboro, Mass., networking firm uses DirectChoice to notify trading partners registered with Banyan's Web page of price changes and product updates.

One advantage is that the software provides an automated mailing list that doesn't have to be manually up-



Users of Juno's free E-mail service see an advertisement with each E-mail message they receive or create

dated and checked, thus reducing housekeeping chores.

"We are going to save \$120,000 this year as opposed to doing [postal] mailings, since it is so tough to keep lists clean," Joe said. "DirectChoice is like a self-cleaning oven that gets washed whenever you put something on the Web server."

Another way to safely advertise on the Internet is to give away advertiser-supported E-mail software. This month, Juno Online Service in New York started to ship free Internet E-mail software that generates revenue from targeted ads placed on each E-mail message. Users see different ads, depending on how they filled out a questionnaire about hobbies and other interests when they registered for the service (see photo).

Freemark Communications, Inc. in Cambridge, Mass., also gives away ad-supported E-mail; the ad shows up as a stamp on an E-mail envelope on the screen. The user profile isn't as detailed as the one developed from Juno's questionnaire.

These new E-mail products are "recognition of an important trend toward more personalized distribution of information."

—Geoffrey Bock,
Patricia Seybold
Group

HotMetal free

HTML editing
the process
of creating
Web-readable

HTML code — has spawned many free tools. HotMetal Free is one of the more popular products. Users can get it at <http://www.muhimbi.com>. The latest version supports extensions tailored to the most recent HTML specification. A commercial version is also available for a fee. It includes support and more advanced editing capabilities.

● John's HTML Tool-case is a good site for downloading scripts to create colored backgrounds for Web pages and other routines. See <http://www.cablelabs.com/JohnsHTMLToolCase.html>.

● One of the more common tasks in building Web pages is converting files or documents to HTML. Conversion utilities of all sorts abound on the Web. For example, transforming plain text, (text that isn't saved as a word processing file) to HTML can be done automatically with Text2HTML. It's at <http://www.cs.cmu.edu/~wsc2/text2html/>.

● Macintosh users can translate Excel 5.0 spreadsheets to HTML tables with Clickable Cells, using a tool at <http://www.holmes.edu/software/tables.html>.

● Word for Windows users can convert their document to HTML pages with a shareware product called EasyFileWeb available from <http://www.cas.com-soft.com>. See <http://www.holmes.edu/wordfileweb.html>.

● At <http://www.html.com/html/c++-editor.html>, users can grab C++2HTML. It was designed to embed HTML comments in C++ code to provide hypertext documentation for C++ applications.

● If you're looking for guidelines about how this stuff works, Randers, N.J.-based discount publisher ITC Books offers a free monthly online newsletter. To subscribe to ITC's E-Letter, check out <http://www.itec.com/subscribe.htm>.

—Alan S. Mich

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HTML editor	Yes	Yes	Yes
Search engine	No	Yes	No
Price	\$99	\$149	\$79



The Internet

Easy-to-do firewalls answer hack attacks

By Gary H. Antnes

Products aimed at protecting corporate networks against intrusions from the Internet continue to emerge at a brisk pace. The latest round seemed aimed at making it easier to set up and run Internet firewalls.

Raptor Systems, Inc. in Walnut, Mass., recently introduced EagleNetwork, which offers a centralized front end to network event logs from multiple firewalls. It depicts network activity in a variety of two-dimensional plots and three-dimensional snapshots and "movies."

Through the use of colors, distinctive icons and motion, EagleNetwork makes it easy to spot network attacks and other problems, eliminating the need to pore through detailed text-based event logs. It will be used by large user companies and by Internet access providers to protect their subscribers, officials at Raptor said.

Bell Atlantic Network Integration, Inc. in Fraser, Pa., uses Raptor firewalls to protect its customers' networks as well as its own corporate network. The company

will install EagleNetwork, said Vernon Clements, director of enterprise support services.

Watch what you want

Clements said an administrator recently spotted a network intrusion in progress by reading a Raptor event log, but he spotted it by sheer luck since the logs are so voluminous. "Now administrators can see the information more clearly—they can see patterns—and they can predefine the things you want to watch," he said.

"Network allows monitoring, which usually requires highly technical personnel, to be done by

less technical people," said Chris O'Hara, a network security specialist at Coopers & Lybrand in Stamford, Conn. "However, you still need someone more skilled behind that person to deal with events that come up."

Even with a firewall, successful break-ins are possible and attempted break-ins are inevitable, warned Ted Julian, research manager for

Internet commerce at International Data Corp. in Framingham, Mass. "But you have to be prepared to quickly recognize a break-in," he said. "What I like about the [Raptor] product is the way it makes it easy to recognize that a break-in has or is occurring."

In another move to simplify firewall administration, Raptor and San Francisco-based CheckPoint Software Technologies Ltd. recently expanded beyond the traditional Unix world with firewalls for Windows NT. Several users said they would migrate to NT because it is simpler.



Raptor's EagleNetwork gives multidimensional views of network activity

Atlanta-based Technologic, Inc. recently introduced Interceptor 2.0, which company officials say is the first Internet firewall to use a Secure Sockets Layer (SSL)-enabled World Wide Web browser interface. The interface is intended to simplify firewall configuration, an often-complex task that involves reflecting a user organization's security policies in software.

Keep it simple

Ease of use has become an important criterion for firewall selection at Dun & Bradstreet Software. The company has two Internet

firewalls at its Atlanta headquarters and will be adding more of them elsewhere in the U.S. and Europe as its corporate intranet grows, said Dan McGinn-Combs, manager of network systems.

McGinn-Combs said he will upgrade from Technologic's Interceptor 1.0 to the new version with the SSL Web browser interface, and that will simplify and strengthen network security, he said. "It will give me the ability to know that changes to firewall configuration are secure and that no one else can make them," he said.

IS managers looking for the most user-friendly tools may be tempted to use less secure products, Julian said. "Most system administrators will sacrifice some security for ease of use because they are undertrained," he said. For example, routers can perform many of the functions of firewalls, and they are generally easier to set up, but they are not able to perform all the analytical functions of a firewall, O'Hara said.

Break-in months

In a poll by the National Computer Security Association, 55% of 270 companies recently identified at least one security-related break-in in the previous 12 months. A survey of 1,000 information systems executives by InformationWeek End User & Young found that 27% had suffered break-ins or attempted break-ins via the Internet.

I/Pro to let users compare their Web site traffic with averages of other sites

By Mitch Wagner

I/Pro Corp. plans to offer users the ability to compare traffic on their World Wide Web sites with averages around the Web.

The San Francisco company specializes in helping users monitor who visits their Web sites and track usage patterns. Beginning next month, I/Pro plans to begin aggregating its statistics to allow I/Pro subscribers to determine whether they are doing better or worse than the Web at large.

I/Pro will include basic statistics as part of its services at no extra charge. For an additional fee yet to be determined, subscribers will be able to get statistics broken out by industry and compared with the aggregate traffic of all other I/Pro subscribers in a particular niche.

But user Carl Leubsdorf Jr., an applications specialist at Calvert Group Ltd., an investment company in Bethesda, Md., questioned the need for comparing the popularity of one Web site with another.

He said that might be necessary if Web sites were competing with one another for users, but the Web is still new enough that any new electronic commerce site creates new business for everybody, even if the new site does the same thing as another site.

"It's more important to just see what the other sites are doing, rather than how well they're doing," Leubsdorf said. He watches competitors' sites for ideas that should be implemented in Calvert Group's own business.

I/Pro provides its services to about 150 Web sites, including those for USA Today, Playboy and Yahoo. Inc. It offers two levels of service. In I/Count, I/Pro installs agent software on a company's Web sites. The agent software transmits usage data back to I/Pro servers. I/Pro then returns estimates of traffic usage, including how many users visited a site, when they visited, how long they stayed and what areas of the site they visited. Pricing for I/Count is in hundreds or thousands of dollars

per month, depending on the volume of data being analyzed and the kinds of analyses being sought.

Fraud patrol

I/Audit is the same as I/Count, except the results are analyzed by professional auditors, who look for fraud and errors and then certify the results. I/Audit, priced at \$1,500 per month, is more often used by sites that accept advertising online to authenticate traffic figures to advertisers.

Competitors to I/Pro include commercial products dedicated to tracking usage of Web sites, including products from Group Counts, NetGenesis, Interweave and E.G. Software. Web servers such as those from Open Market, Inc. and Netscape Communications Corp. also include usage tracking tools. And a big competitor comes from free software, including giveaway software packages such as Getstats and Wusage. Additionally, a commercial package called NetCount offers free usage tracking for sites that receive fewer than 100,000 hits per day.

Briefs

NetManage ships suits for intranets

NetManage, Inc. in Cupertino, Calif., recently began shipping IntraNetManager, a suite of World Wide Web products for setting up internal Web sites on Windows NT. Key to the set is IntraNet Forum Server, which uses the Internet's Net News Transport Protocol (NNTP) to form threaded discussion groups. Users' on-line newsgroups use NNTP. The suite is priced at \$995 but discounted to \$495 through June.

Help for the overburdened

Confused Internet and intranet users can call a help line set up by Attachmate Corp. in Bellevue, Wash. The Corporate Internet HelpDesk was designed to relieve "overburdened" information systems departments from at least some of the more routine Internet questions. Attachmate declined to specify pricing for the system, saying fees depend on

the needs of each user company. For details, see <http://www.attachmate.com>.

Versant forms Internet alliance

Versant Object Technology, Inc. in Menlo Park, Calif., assembled the Internet Business Alliance to create a business-transaction infrastructure for the World Wide Web. The alliance, which will focus both on new Web-based applications and retrofitting legacy applications for the Internet, includes Smalltalk vendor ParcPlace Digital, Inc. in Sunnyvale, Calif.; design firm Art Technology Group, Inc. in Boston; data management vendor BMC Software, Inc. in Houston; test-secure vendor HNC Software, Inc. in San Diego; object-relational database vendor Oracle, Inc. in Lowell, Mass.; Co-library vendors Rogue Wave Software, Inc. in Corvallis, Ore., and Rag, Inc. in Mountain View, Calif.; and object-consulting vendors Post Modern Computing Technologies, Inc. in Mountain View, Expansoft Corp. in San Diego and Iona Technologies Ltd. in Westboro, Mass.

New Products

Metz Software, Inc. has introduced Netretriever, software that retrieves and displays World Wide Web pages and files as scheduled by the user.

According to the Bellevue, Wash. company, Netretriever connects to the Internet, gets the specified information at specified times, disconnects and displays the gathered information as screen savers, slide shows or wallpaper.

Retrieval can be scheduled for specific months, days and minutes. Netretriever includes a list of popular Web pages and images that are regularly updated and downloaded.

Netretriever costs \$39. A 45-day trial version is available through Metz Software's home page at <http://www.metz.com/metz>.

► Metz Software
(206) 641-4325

WebMaster, Inc. has announced ConferenceRoom, software for Internet Relay Chat (IRC) servers.

According to the Santa Clara, Calif. company, ConferenceRoom allows Windows NT servers to seamlessly communicate with Unix and VMS-based IRC servers. It works with major public IRC networks.

ConferenceRoom also allows enterprise-wide collaborative computing through IRC, using a platform-independent networking standard. It can launch any Multipurpose Internet Mail Extension-compliant document to all members of an IRC channel. It also allows World Wide Web browsers to become chat clients. The software provides a configuration utility that permits administration of the IRC server from any secure Web browser.

ConferenceRoom costs \$249 per server. A trial version is available through WebMaster's home page at <http://www.webmaster.com>.

► WebMaster
(408) 345-1800

LinkStar Communications Corp. has rolled out Site Launcher, a World Wide Web publishing software application.

According to the Deerfield Beach, Fla. company, Site Launcher gives users a simple, automated way to publish and promote content on the Internet. Users design a Web site using any authoring tool and then send it to Site Launcher. It uploads the Web page from any PC to LinkStar's or a licensee's Web server, where it is added to the LinkStar Internet Directory. Site Launcher

sends the user a confirmation of the page's existence and uniform resource locator and then submits the site information to popular Internet search engines.

Site Launcher supports complex Web sites created with Sun Microsystems, Inc.'s Java. It runs on Windows 3.1, Windows 95 or Windows NT and requires 4M bytes of RAM. A Macintosh version will be available later this year.

The software is free. More information is

available at the LinkStar Communications home page at <http://www.linkstar.com>.

► LinkStar Communications
(954) 426-5465

Galacticom, Inc. has rolled out Worldgroup 2.0.

According to the Fort Lauderdale, Fla. company, Worldgroup 2.0 was designed to bridge the gap between the World Wide Web and online systems and workgroups.

When users browsing the World Wide Web click on a HyperText Markup Language link to a Worldgroup application, a Network Communications Corp. plug-in initiates a direct connection to a Worldgroup server. The connection is made through the same TCP/IP link that gives the user Web access.

Pricing for Worldgroup 2.0 starts at \$476.

► Galacticom
(954) 583-5390

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Sybase lands \$3 million
Australian deal, pp.

Corporate Strategies

Lessons on installing R/3

By Julia King

If executives at Merisel, Inc., had it to do again, they'd still buy SAP AG's R/3 system. But they'd implement it a whole lot differently.

First and foremost, they would deploy R/3 as is rather than extensively customize the software. They would also give themselves more installation time and put a lot less faith in simulated tests.

"It was probably the most difficult implementation I've done in 29 years; it's overwhelming," said Paul Lemerise, senior vice president and chief information officer at the El Segundo, Calif., hardware and software distribution giant.

It took a 120-person team 18 months to install R/3 at Merisel's \$12 billion Canadian operation. With 350 users, the Toronto-based division, which switched to the system over a week-end last August, now risks as the largest production R/3 site in the world.

No pain, no gain

But getting there wasn't painless for Merisel or its customers.

First, the work involved in customizing R/3 to conform with the company's dealer credit process and its sys-

tem of stocking multiple warehouses took more time and money than expected. At the time, Merisel was the only distribution company using R/3 software. Looking back, Lemerise said he would team with other R/3 users in the distribution business and lobby SAP to make standard certain capabilities specific to the industry rather than customize the software.

Once Merisel had the system up, difficulties integrating R/3 and an in-house warehouse system delayed shipments and caused orders to be missed. Transaction volumes also strained the system more than expected, even though the company had run dozens of simulations.

The lesson here: "Don't let your benchmark results lure you into thinking you know how the system will perform on day one," Lemerise cautioned.

"No matter what you think you're going to spend and no matter how much you pad your estimates, double them."

— Paul Lemerise
CIO, Merisel Americas



Insufficient training of some 250 salespeople using a new and more complicated R/3 user interface also resulted in lengthy telephone waits for customers. "When a typical salesperson takes 100 [orders] calls a day and the average time increases by a minute or two, that's a big deal," said Tom Reeves, president of Merisel Canada.

A month after cutting over to the new system, Merisel issued a letter of apology to its customers, attributing service degradation to R/3 conversion problems. However, support from SAP developers in Germany was nothing short of excellent, Lemerise added.

Today, both Merisel executives and customers list access to real-time information as the biggest benefit of moving to R/3.

"Before SAP, everything was done over the phone. Now, we have an on-line system that lets us dial in electronically and place orders, send E-mail and find out the status of orders," said Randy Kalpin, president of Compuquest, Inc., a Merisel customer in Toronto.

As a result, "our sales reps are much more effective at tracking things," he said.

Insufficient training of salespeople using a more complicated R/3 interface resulted in lengthy telephone waits for customers.

— Tom Reeves
President, Merisel Canada



Overseas: One solution to year 2000

By Thomas Hoffman

Con Edison is outsourcing its year 2000 work to low-cost programmers in Ireland and India.

By farming the work out to offshore outfits under fixed-cost contracts, Consolidated Edison Company of New York, Inc. expects to spend \$3.5 million to \$5 million for the 105 date-sensitive programs that must be modified. That's about three times less than what domestic vendors said it would cost, said Abe Lichtig, a technical specialist at the New York-based utility. Con Edison serves 3 million customers in

New York City and neighboring Westchester County.

Con Edison isn't short-changing itself by using offshore programmers, Lichtig claimed. The Irish and Indian firms "had the most experience at the lowest cost," he said.

Experts say organizations with software applications that contain two-digit date fields, such as utility customer billing systems, will misinterpret 2000 as the year 1900. If Con Edison made no changes to its date-sensitive systems, "about 80% to 90% of our systems would come to a halt on Dec. 31, 1999," Lichtig said.

Year 2000 gurus say Con Edison is plugged in to the date-change problem. "Working around the clock using offshore resources is an excellent way to buy back time not available during normal working hours," said William Ulrich, president of Tactical Strategy Group, Inc., a consultancy in Aptos, Calif.

Market research firm Gartner Group, Inc. estimates that fixing each line of code could cost between 50 cents and \$1.50. With 24 million lines of

date-sensitive code at stake, Con Edison could pay \$12 million to \$36 million to repair its date-sensitive programs, but is using overseas labor for what it hopes will be a fraction of that cost.

There are other benefits to tapping offshore vendors, which Con Ed hasn't yet contracted. For example, the vendors could access the utility's two Amdahl Corp. MVS-based mainframe systems at night "while we sleep," Lichtig said. So there won't be any issues

with overloaded resources during Con Edison's busy times.

The two vendors Con Edison is considering are working on two IBM IMS database applications as pilot projects: a vehicle management system and an electric metering system. Both will be completed next month, and then Con Edison will make its choice.

Although Con Edison expects to have all its applications reprogrammed by 2001, it has already encountered stumbling blocks. "We may have underestimated the amount of internal resources required. Even with [proposals to vendors], you've got database administrators, systems people and [quality assurance] people whose time is needed," Lichtig said.



Mobil

CONTINUED FROM PAGE 1

le mail groups so that they report to a single boss. Projected IS savings from the cutbacks: \$320 million per year.

Eileen M. McCoy, a company insider and former supply analyst, was named global information manager without fanfare but full. She wasn't available for comment last week. A Mobil spokeswoman said it would be "very premature" to talk further about IS organizational changes. But Mobil officials said a key focus of the changes is to re-engineer core internal functions — notably purchasing — automate invoice processing, eliminate paperwork and get better deals. These changes include the following:

- Consolidating 300 different systems by implementing SAP AG's R/3 in U.S. petrochemical operations.
- Signing up nearly 500 new EDI partners, mostly service suppliers.
- Installing an intranet that brings news of buying agreements and contracts to purchasing agents. Users in 120 countries will be able to access the information using the mobil.com World Wide Web page.
- Closing data centers in Tokyo, Australia, Singapore and the U.K. and consolidating into a Dallas location by early 1997.

Other firms may follow Industry analysts say shrinking profits in oil refining and unsteady oil prices are likely to force other major petroleum firms into similar cutbacks and automation.

With this restructuring, Mobil



Mobil's Roger L. Trout says the company is counting on electronic commerce to make it more efficient and profitable

aims to make itself more efficient and more profitable.

For instance, "In the past, Mobil has not leveraged its buying power worldwide," said Roger L. Trout, Mobil's EDI manager. Chemical, refining, exploration, marketing and headquarters groups in five continents share their own deals, he said. "Now there will be global contracts. We

don't have a way to communicate that today," Trout added.

Sterling Software, Inc. provides EDI software and value-added networks to Mobil. Its Gentran Server and Connect Mailbox software route invoices to internal Mobil applications. The invoices are then automatically approved and paid within authorized ranges. Similar systems pay utility bills, as well as federal and state tax bills.

EDI and Internet initiatives will help Mobil do the following:

- Eliminate about 70% of paper invoices from suppliers by mid-1997.
- Reduce the number of people who process invoices from 472 to 142 by the end of the year.
- Cut the cost of processing an invoice from \$15 to less than \$5.

Overall, Mobil officials say electronic procurement, including paperless invoice processing and purchase orders, will save the company \$34 million annually. The cost for this savings: \$150,000 for hardware and communication software.

The biggest challenge was getting supplier buy-in, Trout said. Last fall, Mobil mandated that all suppliers use EDI.

By December, more than 1,000 suppliers are expected to use EDI to do business with Mobil. Com-

Sybase lands \$3 million deal

Australian office standardizes databases

By Computerworld Australia staff
STONEY, AUSTRALIA

The New South Wales Department of Health has started an ambitious statewide project to standardize its corporate database infrastructure, signing a \$3 million deal with Sybase, Inc.

The decision is significant given that Oracle Corp., the other vendor considered for the project, is entrenched at the Department of Health as an applications supplier. Indeed, the department is believed to be one of the largest Oracle sites in Australia.

Under the terms of the contract, Emeryville, Calif.-based Sybase will provide a new database platform for departmentwide database implementations, including a statewide health information data warehouse.

David Gates, who signed the contract with Sybase last week, led the evaluation. The implementation will take place mostly on Digital Equipment Corp. Alpha machines running Unix and possibly on some IBM VM-based machines.

In a separate deal, the department adopted Powersoft Corp. development tools. Powersoft is a division of Sybase. Fujitsu Ltd. will also benefit from the health department's largesse, picking up the lucrative systems integration business.

According to Peter Williams, acting general manager for information asset services, arrangements under this project allow the health department to determine an information warehouse infra-

structure for each of the Area Health Service (AHS) offices as well as for itself.

"While the department had requirement at the strategic level, the AHS also had its own business requirements," he said. A number of the areas had formed a consortium to go out and look at a new development environment and platform for local initiatives. Williams said this prompted the department to join the AHS group in the interest of creating a statewide infrastructure.

Database implementation

The health department currently uses Oracle Financials, but Williams said this didn't influence selection of the database. "It's a generation change to some degree," he said.

Flexibility key

The big reason behind the change is that the department looking forward to the flexibility of being able to integrate data in both the transactional and warehouse applications. "You can isolate queries on the fly — you can get a lot more adaptable an tap in to that resource. From a strategic point of view, that was the driver," Williams said.

Another advantage is that it joint purchase will create a cost pool split up among the office allowing them to significantly reduce development time by working together on new application. Williams said. In the future, offices will be able to swap or share application components, he added.

This article was excerpted from Computerworld Australia.

Hard at work

Other current electronic commerce projects at Mobil include the following:

- Expanding an intranet/EDI system to 220 North American distributors of Mobil heavy lubricants by year's end. A pilot starts in June.
- Increasing the number of Internet applications from 40 to 60 by year's end.
- Expanding a "procurement card" program from 4,000 to 7,000 users. Invoices for company-issued MasterCard are sent via EDI to department heads, eliminating paper and EDI purchase orders.

their PCs. The information then can be used to order via EDI.

• Letting Mobil credit-card users pay their bills via the firm's Web page by June. Payments will be passed to National Citibank Corp., according to webmaster Sandy Massey.

—Joseph Maglitta

pany operations in Japan, Australia and Singapore also have begun implementing EDI for issuing invoices and ordering. Trout said.

At United Parcel Service, Inc., one of Mobil's biggest suppliers, business analyst Kevin Shaw said the new EDI link runs smoothly. Now, electronic bills for Mobil's 500 UPS accounts are sent via EDI directly to Mobil managers and receive approval by a click of a mouse.

Room to grow

Over the next six months, the system will be expanded to allow Mobil users to pay via EDI, added

David Schuler, UPS' national account manager.

Mobil plans to build its global electronic commerce strategy using a mix of traditional EDI on Internet technology. "It's not a either/or choice," said webmaster Sandy Massey. "We're looking at ways to marry the two."

Mobil's IS survivors said the are working as fast as they can to keep up with demand from business units and outside customers.

"They're beating my do down," said Daniel Villares, Mobil's EDI team leader. "There is too much work; we are running lean."

Meeting the Challenge of Client-Server Computing

Maximizing Return-on-Investment of Network Computing

The migration to client-server computing is affecting organizations both large and small almost everywhere on the planet. Computer users today have extensive access to global network-based resources, including communication gateways to other companies, individuals, and markets worldwide. Signs of this connectedness abound:

- Last year the number of LAN users worldwide hit nearly 100 million, double the number in 1993. By 1999 the number will double again.
- In the same year the number of people in the world with electronic mail boxes topped 40 million. By 1999 the number will be over 125 million.
- Groupware users numbered over 30 million worldwide by the end of 1995; by 1999 they will number over 250 million.

So we are heading for a wired workplace, a wired marketplace, even a wired society. However, there is a price to be paid for all this connectivity. The nearly universal implementation of client-server systems requires living with new levels of complexity and new hardware and software that people must be trained to use. Moreover, highly skilled personnel must be hired to install, manage, maintain, and administer these far-flung networks. The result is that staffing costs have become the largest contributor to total networked computing costs, regardless of the size of the installation (see Figure 1).

Until now, companies have justified the costs and complexities of client-server computing by competitive advantage—it is a very flexible and adaptable computing style. But when client-server is the norm, where will the competitive advantage lie?

IDC believes that companies that learn to manage their networked resources through technology and training will win out over their peers in the long run. Companies that understand the true costs and true benefits of client-server computing

Figure 1 — The Hidden Costs of Client-Server



will generate quicker return for their investments. Companies that relentlessly optimize, integrate, and upgrade existing systems will stretch IT resources further and be able to reinvest sooner than competitors taking a wait-and-see approach.

Areas of Opportunity

IDC and Novell have teamed to produce this White Paper in order to help IT managers develop a strategy for maximizing return on investment in networked computing resources. It is the executive overview of three studies researched and written by IDC and sponsored by Novell. In the research it conducted,

Driving Down Networking Costs

GroupWise:

Typical annual return-per-user of 334%

Nearly \$400,000 a year saved in phone costs at Farmland Foods

Courier costs cut \$16,000 a year at Sheppard, Mullin, Richter & Hampton

NetWare 4:

On average 15% less expensive than NT Server from Microsoft

50% increase in users supported by a single server

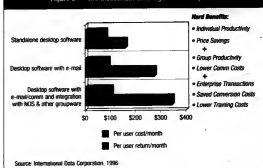
ManagerWise:

\$95,784 savings in business efficiency per 100 users

50% reduction in network downtime

19.7 day payback

Figure 2 — The Investment Leverage from Groupware



IDC found three areas of networked computing that are focal points for ROI leverage:

1. The choice and use of communication applications such as e-mail and groupware
2. The choice and use of next-generation network operating systems
3. The use of advanced network and system management tools

In addition, IDC found that when products in support of all three of these areas work together in an integrated fashion—such as Novell's GroupWise, NetWare 4.1, and ManageWise products—benefits are compounded. Support and training costs are lower, conversions and upgrades occur faster, applications come on stream sooner, and downtime is reduced.

Applications for the Next Wave

The migration to client-server computing is a quest to provide users with access to information and computer resources beyond their desks. One of the key tools for this is groupware software, epitomized by Novell's GroupWise, software which integrates e-mail with scheduling, calendaring, and other workgroup oriented functions. The market for groupware is exploding as organizations find they can use it—specifically the e-mail function—as a platform for providing workgroup and even enterprise-wide access to information and resources.

In the research IDC conducted, almost half of the business benefits organizations received from migrating to groupware came from better internal and external communications. For instance, Farmland Foods, a \$2 billion dollar meat processing company, found that since installing GroupWise, documents once faced in 15 minutes now take less than five to e-mail. Further, the use of GroupWise saved almost \$400,000 in voice phone calls a year.

- Hard Benefits:**
- Individual Productivity
 - Price Savings
 - Group Productivity
 - Lower Courier Costs
 - Enterprise Transactions
 - Saved Conversion Costs
 - Lower Training Costs

Figure 2 illustrates how electronic communication and collaboration generate cascading benefits. Standalone desktop software can impact individual productivity, but when combined with e-mail, that software can improve the productivity of a whole workgroup, not just the individual user. If the e-mail is specifically designed to work with the desktop software and with the network software, as say Novell's GroupWise is with NetWare 4.1, then those workgroup benefits are compounded.

This efficiency pays real dividends. When Sheppard, Mullin, Richter & Hampton, a Los Angeles law firm, made the move to GroupWise it found the support ratio for lawyers dropped from one assistant for every two lawyers to one for every three. GroupWise scheduling cut countless hours in tasks as routine as setting up meetings; GroupWise e-mail cut courier costs by \$16,000 a year.

For most companies, an investment in groupware is considered an incremental cost. The hardware is already in place, as is the network. Moreover, the support costs—which account for more than 50% of the cost of operating a networked PC—are shared across dozens of applications.

But even with all the hardware, network, and support costs amortized across the groupware software, it's a bargain. IDC's research with Novell's GroupWise customers found that a typical installation required only about \$250 in fully-loaded first-year costs—less than 5% of the annual cost of operating and supporting an end-user personal computer.

For that \$250 investment, those same GroupWise customers found that their first-year return was over \$800 on lowered communication and clerical costs alone. Meanwhile, they accrued an array of other concrete benefits, such as fewer meetings (and thus less travel and meeting administration), easier document handling, and so on. For every single GroupWise customer interviewed by IDC, return-on-investment exceeded expectations.

Modernizing the Network

If the LAN is the heart of client-server computing, then the network operating system is its soul. As LANs have evolved from peripheral information systems to the primary components of mission-critical systems, they have become more robust and more scalable. Along the way they have also provided IS personnel with the tools to manage network resources as never before.

In fact, powerful new management capabilities are why many people are migrating to NetWare 4.1. With more than 375,000

licenses installed worldwide as of 1995, it is the most popular network operating system. Three key reasons for its popularity are:

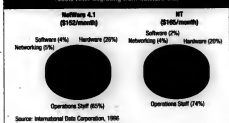
- Greater functionality
- Improved management
- Directory services

Figure 3 illustrates how survey respondents believe migrating to NetWare 4.1 has enhanced network productivity—with ease of administration at the top of the list, mentioned by nearly 40% of respondents. NetWare 4.1's greater functionality has promoted companies' reliance on LANs and delivered on the ultimate promise of client-server—increased productivity.

According to recent surveys conducted by IDC, LAN managers report remarkable improvements in managing their networks under NetWare 4.1. Although they expected the number of nodes on their networks to grow by 260% in the 12 months following installation, they anticipated the number of file servers on the network would grow by only 163%. In other words, under NetWare 4.1, they expect to increase the ratio of users per server from 41 to 60—an improvement of 50%.

In addition to increasing the number of users per server, NetWare 4.1 provides a single point of administration with Novell Directory Services (NDS) that results in a lower cost of network administration. Figure 4 shows how, in medium-sized

Figure 4 — Network Cost-to-Use at Medium (300 User) Sites (Costs After Migrating from NetWare 3.11)



sites, NetWare 4.1 generates 14% lower network administration costs than Microsoft NT, primarily by increasing the user to support staff ratio.

Novell and other networking companies have set their sights on developing new technologies that will make tomorrow's networks more efficient and flexible. Novell has developed a Smart Global Network strategy, which entails making the network available to anyone—anytime, anywhere. An essential component of the Smart Global Network is Novell Directory Services (NDS), which enables companies to keep track of and connect all of a network's users, workgroups, hardware and software on one common access and administrative framework. NDS provides directory services technology that can handle the management of countless resources on heterogeneous systems spread around the globe. Also fundamental to Novell's vision of the future is an open set of application programming interfaces (APIs) that will make it easy to incorporate NDS and other NetWare 4 networking services into distributed applications.

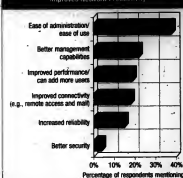
Providing End-to-End Network Management

Scaffolding costs and end-user productivity are the issues that keep IS managers awake at night. And that has never been more true than it is today. As networks expand and interweave, the critical success factors for network managers will include:

- Increasing network uptime, both in operation and when installing new users or applications
- Increasing efficiency by supporting rapid network growth without commensurate growth in staff
- Increasing responsiveness, fixing problems in a way that minimizes idle time for users or within business processes

To meet these needs, Novell offers ManageWise. It combines both network management and PC administration into a single, integrated package. Previously, most PC administration and LAN management products worked independently of one another, each requiring dedicated staff and resources.

Figure 3 — How NetWare 4.1 Improves Network Productivity



ManageWise is the integrated solution that offers a single view of the network. It provides analysis tools for understanding bottlenecks; permits the configuration, inventory, and diagnostics of PCs from a single local or remote site; and provides tools for monitoring and managing remote and local servers. IDC's research demonstrates that even small and medium-sized companies can achieve significant cost savings by implementing ManageWise (see Figure 5). Network managers found that the most significant gains in efficiency were realized in server operation and help desk functions. Using ManageWise also increased LAN manager responsiveness. Before implementation, only 30% of network or end-user problems could be solved from a central site; afterwards, that number rose to 60%. This is especially important for companies with highly decentralized operations.

Since the software-licensing, maintenance, and training costs of a product like ManageWise are low compared to the number of users potentially affected, the return on investment can be surprisingly high. Across the survey base polled by IDC, ManageWise paid for itself on average within 19.7 days.

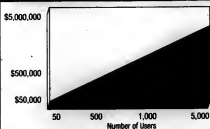
For every 100 users, implementing integrated management with ManageWise saved \$95,784 annually. These savings are attributable to the following:

- More efficient systems management, including an increase of 33% in the number of servers and 25% in the number of PCs a staff person can support, and a decrease in travel of 53%, leading to annual cost savings of \$14,500
- Significant reductions in the time required to perform key management tasks—such as five hours in moves and changes, nine hours in server maintenance and configuration, seven hours in help desk and support, four hours in problem tracking, three hours in printer maintenance, etc.—saving \$30,844 annually
- Dramatic reductions in network downtime (over 50%) due to network outages, delays addressing problems at the desktop, or time spent installing and configuring applications, generating annual savings of \$50,440

**Cost-Savings and Client-Server:
They Aren't Mutually Exclusive**

Believe it or not, return on investment in networking can be quantified. While it may sometimes seem that networks are growing out of control, vendors like Novell are in fact working diligently to develop products for simplified, easily managed

Figure 5 — Average Annual Savings From ManageWise



Source: International Data Corporation, 1996

local, wide-area, and global networks. Because of the strategic and financial advantages of networking wherever systems reside and users roam, organizations will be forced to expand the reach and complexity of their networks simply to remain competitive.

Astute companies will concentrate on migrating to client-server computing in ways that maximize both the resources available to run networks and the effectiveness of those who ultimately generate revenues and profits—namely, end users.

Call to Action

This is an executive overview of a three-part series of White Papers entitled:

- Novell GroupWise: Leveraging Desktop and Network Investments
- Novell NetWare 4.1: Reducing Cost of Ownership
- Novell ManageWise: Maximizing Returns on Networking Investments

For a free copy of the Novell Business Advisor containing tools that help you assess return on investment with NetWare, ManageWise, and GroupWise, as well as electronic versions of the IDC White Papers, call 1-800-665-4586 or visit either the Novell home page at <http://www.roi.novell.com> or the IDC home page at <http://www.idcresearch.com>



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ADVANCESTACK HUBS AND SWITCHES

Remote I/O. Connectivity to remote sites



SNMP. Intelligent network monitoring and performance optimization



Dial-A-LAN. Dial-in to remote access

HUB MODULES

REMOTE PC

REMOTE PORTABLE

High-performance, multi-media and time-sensitive apps



100Base-T. High-performance switch to switch or switch to server. Coming soon



10Base-T. Switch to 10Base/6 and easy migration to high performance



FDXX. High-speed connectivity



CISCO. Future router access



ATM. Coming soon

SWITCH MODULES

WE'VE
WINGS
SO

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to provide...
in...
Increase...
doorstep.
This...
heart of...
it combines...
resulting in...
product line.
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Managing

Picture this.

Build a system that shows workers how to do complex tasks quickly, and you can gain competitive advantage. Just ask the folks at Williams Technologies.

BY ALLAN E. ALTER

Talk about luck. If you can call an inexpensive system that has helped quadruple sales luck.

Back in 1990, Jeff Anderson, president and general manager of a small, privately held manufacturing firm called Williams Technologies, Inc., had a dream. He wanted to turn his Summerville, S.C., plant, where workers take apart, clean and rebuild car and truck transmissions, into a flexible factory.

His vision in one every manufacturing executive in the world would like to achieve: to produce more varieties of products — in any quantity — and do it more quickly and accurately than before. Achieve it, and he'd have a great story to tell potential clients, Anderson thought.

Creating such a factory was no small feat. Each transmission has about 1,000 parts, which can be assembled in dozens of ways. Workers spent up to 53% of their time looking up assembly instructions in loose-leaf binders, Anderson says.

Anderson had envisioned a solution: computer workstations with instructions for building many different transmissions. But it remained just a vision until early 1991.

Then, because their daughters were friends, he invited Greg Allen and his family over for a barbecue. While the fajitas sizzled, Anderson described his dream system to Allen, a former photocopier salesman who taught himself programming, went into computer sales and opened a small custom software development shop. Allen said he'd come up with something

and returned a month later with a working prototype. It was a "Eureka!" moment, Anderson recalls. He had "tripped across technologies that were exactly what I had in mind and somebody who could pull it off," he says. Anderson quickly brought in Allen as a consultant.

Anderson was the only information systems professional on a seven-person development team that began work in May 1992. The first manufacturing line using the ProNet system went operational in January 1993. It went into widespread use a year later.

The system is remarkably inexpensive. Total cost for the pilot: \$27,000, including \$15,000 for 10 workstations. The system has grown but still runs on inexpensive software and equipment (see "The technical details" at right). The entire support staff consists of Allen, who is now a full-time Williams employee, and the one other member of Williams' IS department.

Did the system Allen helped create live up to Anderson's dream? "No question about that," says Anderson, who provided the following facts:

- **Productivity:** In two months, the ProNet pilot, a control valve body operation, was producing twice as many control valves with the same number of people. Today, Williams builds 450 transmissions a day, two times more than it did a year ago.
- **Flexibility:** ProNet has enabled its workforce to produce many different transmission models in any quantity on one remanufacturing line. The biggest limitation appears to be the three months it takes to write

and photograph instructions for a transmission. One customer vouches for the flexibility claims. "With ProNet, they have the capability of going in and rebalancing their people and output. They can respond to our schedules much quicker," says Al Baumgart, a senior systems analyst at the Allison Transmission division of General Motors Corp. in Indianapolis.

• **Speed:** Cycle times have shortened. The average assembly time for all subassemblies and final assemblies has decreased from 150 seconds to 90 seconds.

• **Growth:** Besides the increase in sales, the number of employees has grown from 220 to more than 500. Williams Technologies has gone from one major customer — General Motors — to seven. They include Ford Motor Co., Mazda Motor Co., Hyundai Motor, Nissan Motor Co., Honda Motor Co., and Caterpillar, Inc. All work for GM and Nissan is done on ProNet, and Ford transmissions soon will be remanufactured using ProNet.

Ford, like GM, was impressed enough by ProNet to buy the system and launch its own pilot. "We saw how dramatically [ProNet] improved their operations," says Mark Femminaro, an assembly and test engineer at Ford's transmission and new products center in Livonia, Mich.

Because their facilities don't produce as many different transmissions as Williams, Femminaro and Baumgart say a system such as ProNet probably makes the most sense as a training aid for them. But for managers who need to increase productivity and flexibility simultaneously, two lessons stick out: even low-cost computers can make great just-in-time instruction manuals, and rub a rabbit's foot before your dinner guests arrive. You might get lucky. ■

Allen is Computerworld's senior editor, Managing.



GREG ALLEN, helped create a manufacturing system for Williams Technologies

Surf sites: Make the Web work for you with these home pages. **Page 76**

How to build a clutch assembly

Don't fret if you've never built one before. Williams Technologies' factory-floor computer system will show you how to make this transmission part.

Before you is a day to build your clutch assembly and hours full of parts. Then the fun ends on the way, and the computer will call up the right set of instructions for this particular assembly. It's time to begin.



1. The screen shows you the parts, tells you how to inspect them, and provides the names and part numbers. Look for tips or suggestions called by your customer. If there are any, you'll find them when it says, "Don't forget to inspect." Push a point with your foot, and the next screen appears.



2. Now look, drag and point your foot. Instantly, the screen is shown a photo of these parts, taken with a 640x480 resolution, so no detail that you see will have gone with this lesson. "Thinking" the longer—waiting while logging, waiting, waiting, waiting—until the direction order is taken.



3. What's better, video or photos? It depends. The best tells you how to inspect the photos, the diagrams show you probably how to think them.



4. It's time ready for the first step, inspect, build and the assembly is ready to be tested or sent down the line. You are ready to start over or build some other transmission part.

The technical details

The technology that makes ProNet run is inexpensive and common. (Note: Williams Technologies uses Intel PCs.)

THE SERVERS Four PCs (includes two 50-MHz 486 machines with 32M bytes of RAM and two 60-MHz Pentium-based machines), each with 2.25-Byte Seagate hard disk drives.

NETWORK SOFTWARE Novell NetWare 4.1. Moving to TCP/IP standard.

APPLICATION SOFTWARE ProNet, developed by Greg Allen, runs in DOS and can run on a 386 PC with 1M byte of RAM. ProNet runs with OpenAccess, a database engine from Software Products International in San Diego.

THE FACTORY-FLOOR COMPUTERS There are 98 25-MHz 486 PCs with Super VGA

monitors on the plant floor.

THE IMAGE CAPTURING EQUIPMENT A 60-MHz Pentium-based PC with 8M bytes of RAM and a 520M-byte hard disk drive, running Windows 3.11. Image capture software is Computereyes from Digital Vision in Dedham, Mass. Photos are taken with a camcorder.

Saving legacy golden oldies

The word "legacy" spells trouble to many information systems managers. It reeks of undocumented code, maintenance chores, expensive hardware and outmoded skills.

But there's gold in them that legacy hills, say Christopher Site and Malcolm Slovitt at Computer Sciences Corp. (CSC) in Waltham, Mass. The gold includes years of customer and product data, proven and stable code and well-tuned disciplines such as security and performance monitoring. How do you separate the gold from the grave?

CSC has identified a three-phase approach in a white paper titled, "Legacy Asset Management: Setting a Course from the Past to the Future." The approach already is beginning to work for some IS managers. Kirk Kneiss, a systems architect at T. Rowe Price Associates, Inc., for example, isn't a CSC client but is already working along these lines. The approach includes the following steps:

- 1) **Portfolio management:** Sort your applications into four categories, depending on whether they should be retired, redeveloped on new platforms, maintained at the lowest possible cost or cannibalized for use in other applications.
- 2) **Hybrid computing:** Use the most valuable parts of legacy systems as reusable components in an IS infrastructure. This includes using software "wrappers" to allow legacy code to work in object-oriented environments and partitioning legacy systems into components that can be phased out or replaced over time.
- 3) **IS transformation:** The IS organization is a legacy asset that must be improved to meet future needs. This includes working more closely with business users and upgrading their skills from a "crafts-based culture" to more professional standards.

Steps such as these work for T. Rowe Price. "We have some existing malpractice applications we're basically going to wrapper," creating building blocks for improved systems, Kneiss says. A customer service application designed for 2,000 external users was adapted for the World Wide Web simply by putting a Hypertext Markup Language front end on it, says Kneiss, who is based in Owings Mills, Md. "Now it has the potential to serve many more users with exactly the same code base."

Copies of the white paper are available by calling CSC at (800) 272-0018.

—Robert L. Scheier
F.Y.I., page 77

Internet sites

Surf sites



Practical Internet sites for IS managers

By Leslie Goff



BusinessTech Home Page
http://www.business-tech.com/

This World Wide Web 'zine was free in March and early this month but was scheduled to start an annual subscription-based model later in the month; it will cost \$99. Although billed as a "one-stop source for... insight and analysis on... business, technology and strategy," much of the content in the first issue was Internet related. The writing is a tad inflated at times, perhaps because one of the publishers also is a consultancy (Tribeca Research, Inc. in New York). The links page is weak; it points to sites that have little, if any, relevance to information systems managers. Promising pages include: "News and Reviews," which contains well-written, insightful analyses—though more about initial public offerings and start-ups than IS issues; "Methodology Review," a monthly column that uses a model to evaluate whether a consultant's re-engineering methodology is hip or hype; and the "Community Page" and "Analysts Network Page," both of which are scheduled to enable real-time interactive discussions and forums later this year.

COMPUTER BOOK REVIEW

ALL-TITLE REVIEWS AND RECOMMENDATIONS
http://www.computerbookreview.com/cbr/

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You can quickly and painlessly find relevant reading at this efficiently organized site. Browse for book reviews on topics ranging from Apple Computer, Inc. to the Web, or link directly online to more than 40 computer bookstores and about 30 computer book publishers. Reviews are organized by subject, title and author, publisher, number of pages, price and notes about the book's usefulness. New reviews appear monthly. Recent titles recommended in the technology management

section included *Virtual Reality Systems for Business* by Robert Thierauf and *Information Technology Standards* by Martin Libicki.

The Computer Events Directory



The Computer Events Directory

http://www.kweb.com/

You're going on vacation, and you're looking for a trade show in the area so you can write off the trip on your taxes. Or, your boss says, "Get up to speed on the Web," and you need to find a developer's conference fast. Go directly to this directory for almost (but not quite) comprehensive trade show information that is searchable by date, location or industry segment. Get tips on how to survive the trade show from the site's twice-monthly column, "The Go-To-Go Guide to High-Tech Trade Shows," which recently offered an at-a-glance chart on how to organize your booth at the end of a long day on the conference floor. Keep the hats, key rings and mugs; junk the "long, windy, self-serving white papers."



International Network of Women in Technology

http://www.wti.com/

Here's a Web site with an interesting concept, but it's more gender-oriented than technology-oriented in implementation. It tries a bit too hard

to be the definitive site for women in technology. Personal, medical and psychological advice columns that read like chapters from *Our Bodies, Ourselves* are featured alongside some business advice. The latter, while technology-related, isn't really geared toward the experienced IS professional, as the site's monitor would seem to suggest. This site may lack broad appeal, but it certainly succeeds at creating a community meeting hall for women on the Internet, complete with a virtual college campus environment. If you're a woman in IS, go ahead and check it out. If not, take a look anyway, even if just for some insight into your co-workers. (Editor's note: In April, some pages at this site were still under construction.)



FCNet (Fast Company magazine)

http://www.fastcompany.com/

Bookmark this if you're looking for a thought-provoking, well-designed Web site with solid business writing that has a singular point of view. *Fast Company*, published by former *Harvard Business Review* editors, espouses a vision of "the new economy" in which we're all "knowledge workers." Relevant articles in the April/May issue include: "The Network is the Company," an interview with John Gage, chief scientist at Sun Microsystems, Inc.; "The Seven Sins of Deadly Meetings," practical advice about making business meetings more productive; and "How Many Words Do Consultants Have for 'Solve Job'?" a compelling essay for anyone who's brought outside help into their IS organization.

OmicronNet

http://www.omiconet.com/

The real gems at this start-up site are reserved for members only—Omicron is a consortium of East Coast IS executives—but the public resources are worth browsing and promise to get better with time. The *Spie*, an information technology news magazine, examines issues that range from the alignment of IS and business to software licensing. It includes text and audio feature articles. Unfortunately, a page of links to Omicron's picks for the Top 10 Web sites was empty in the first issue. Other public pages at the site are "Technology Stock Watch," which concentrates on high-tech stocks news, and "Personal Career Center," which contains job listings for IS professionals. ■

Goff is a freelance writer in New York.



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June workshops

A listing of workshops for IS managers. Most workshops are offered later in the year in other cities. To find the time and location most convenient for you, call the contact telephone number.

CONTINUED FROM PAGE 75

The intelligence thing to do

Is some pest in marketing complaining that IS doesn't understand what's going on with the business? Don't tell him to shut up. Tell him to speak up.

Two professors of marketing administration recently completed a study of how "marketing intelligence" — information culled by marketing departments from market research and competitive analysis — is disseminated.

The professors found that if marketing managers want managers outside their departments to apply this information, they

must communicate with them at least 125 times in a three-month period. Marketers must communicate with formal reports and at meetings as well as via informal conversations or telephone calls.

So here's our question for marketing managers: How many of you share marketing insights with IS at least 133 times a day? If you leave IS out of the marketing intelligence loop, how can IS use this information?

The study also found that if there's too much communication — more than 525 times during a quarter — non-marketing managers will think less highly of the data. Some how, surplus communication with marketing doesn't strike us as a burning IS issue.

Of course, there's an opportunity in this: There must be a way for IS to help marketing departments communicate more effectively with the rest of the company. Perhaps a combination of intranets and electronic mail will help get marketing intelligence out to others.

The study was funded by the Marketing Science Institute in Cambridge, Mass. It was conducted by Elliot Maltz, assistant professor at the University of Southern California in Los Angeles, and Ajay K. Kohli, a professor at the University of Texas at Austin. The study included 788 nonmarketing managers at high-tech equipment manufacturing companies.

— Allen E. Alter

Learning to lead

If you are the president of an IS association, how do you improve your association-managing skills? Join an association for IS association leaders, of course!

That's the thinking behind the formation of the Technology Association Leaders' Council (TALC), an organization for technology associations and user groups being set up by Bruce Freeman, president of the Northeast Technical Association in Livingston, N.J.

Members will hone their skills on fundraising, newsletter writing, managing membership lists and other association management basics. TALC's first meeting will be held June 20 at PC Expo in New York's Jacob Javits Convention Center. For more information, contact Freeman at bfreeman@netcom.com or (201) 716-9457.

Deploying Corporate Applications on the Internet. Detroit, June 3 — Fee: \$545. Contact: Professional Education Strategies Group, Lakewood, Ohio (216) 521-1732.

Connecting to the World Wide Web. Morristown, N.J., June 3-4; Orlando, Fla., June 10-11; San Francisco, June 20-21 — Fee: \$895. Contact: Data Tech Institute, Clifton, N.J. (201) 478-5400.

Service Level Agreements. Chicago, June 3-4 — Fee: \$595 to \$695. Contact: Quality Assurance Institute, Orlando, Fla. (407) 363-1111.

Strategic IS Planning. Chicago, June 3-5; Johns Island, S.C., June 26-28 — For senior managers. Fee: \$1,350 to \$1,550. Contact: American Management Association, New York, N.Y. (800) 262-9699.

Technology Forecasting Workshop. Austin, Texas, June 3-5 — Fee: \$995. Contact: Technology Futures, Inc., Austin, Texas (800) TEK-FUTR or (512) 258-0087. E-mail address: info@tff.com. Web address: <http://www.tff.com>.

Business Process Re-engineering: Strategies, Techniques and Tools. Washington, June 4-7 — Fee: \$1,995. Contact: The Learning Tree International, Inc., Reston, Va. (800) 843-8733. Web address: <http://www.learningtree.com>.

Identifying and Confirming User Requirements. Washington, June 4-7 — For those responsible for identifying user needs in a project. Fee: \$1,995. Contact: The Learning Tree International, Inc., Reston, Va. (800) 843-8733. Web address: <http://www.learningtree.com>.

Information Systems Project Management. Atlanta, June 5-7; Washington, June 10-12; New York and San Francisco, June 19-21; Chicago, June 24-26 — Fee: \$1,295 to \$1,490. Contact: American Management Association, New York, N.Y. (800) 262-9699.

Understanding Client/Server Computing: Planning, Designing and Implementing a Client/Server System. Denver, June 6-7; Washington, June 20-21 — Fee: \$895. Contact: Data Tech Institute, Clifton, N.J. (201) 478-5400.

Re-engineering the Computer Help Desk. Nashville, June 10-11; Morristown, N.J., June 24-25 — Fee: \$895. Contact: Data Tech Institute, Clifton, N.J. (201) 478-5400.

Software: Issues, Contracts, Negotiations. Chicago, June 20-21 — Fee: \$995. Contact: International Computer Negotiations, Inc., Winter Park, Fla. (407) 740-0700.

Communication and Interpersonal Skills: A Seminar for Technical Professionals. Washington, June 10-12; Newport Beach, Calif., June 13-14; New York, June 17-19 — Fee: \$1,395 to \$1,795. Contact: American Management Association, New York, N.Y. (800) 262-9699.

The Crossing the Chasm/Inside the Tornado Seminar Series. Boston, June 18-19 — For managers and those incorporating information technology in the enterprise. Fee: \$1,285 to \$1,395. Contact: Markewide, Inc., Boulder, Colo. (800) 300-3466.

Project Management: Skills for Success. Washington, June 18-19; Boston, June 18-19 — Fee: \$1,995. Contact: The Learning Tree International, Inc., Reston, Va. (800) 843-8733. Web address: <http://www.learningtree.com>.

JAD Facilitation and Methodology Using Object-Oriented Software Engineering Seminar. Greenwich, Conn., June 28-30 — Fee: \$1,475. Contact: Piersan Applications Development, Inc., Stamford, Conn. (203) 322-1560.

Specifying and Managing Software Requirements. Washington, June 18-21 — For project managers developing requirements specifications. Fee: \$1,995.

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Improving Your Internal Consulting Skills: For IS Professionals. Ann Arbor, Mich., June 24-26 — Fee: \$1,295 to \$1,490. Contact: American Management Association, New York, N.Y. (800) 262-9699.

Intranet/Internet Strategies for Engineering and Manufacturing. Orlando, Fla., June 24-26 — Fee: \$845 to \$1,200. Contact: Daratech, Inc., Cambridge, Mass. (617) 354-2339. E-mail address: daratech@daratech.com.

Systems Analysis and Design for Information and Business Professionals. New York, June 24-27 — Fee: \$1,350 to \$1,550. Contact: American Management Association, New York, N.Y. (800) 262-9699.

Calendar announcements should be submitted at least six weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and telephone number.

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AST

In Depth

WILL MICROSOFT

Netscape is the Web browser heavy, but rival Microsoft is starting to give away Internet products. Charles Willford, a senior IS specialist at Owens Corning Corp., thinks Microsoft's move will carry the day.

Having the nimblest browser or Internet server was never the right answer; it was merely a good place to start. The battle was going to be won by whoever made Internet services more accessible to those who know nothing about them other than what they see on CNN. And by giving away Explorer and signing deals with America Online and CompuServe, Microsoft Corp. just won.

Like it or not, Microsoft is the only company positioned to fully integrate all that the Internet is — as both an information and a technology resource — and put it in the hands of business in a familiar context.

Among the most fundamental end-user business questions in the Internet services gold rush are the following: Which company can deliver the most richly integrated group of products, allowing us to leverage all the information and technologies the Internet entails? Which products help eliminate the boundaries between the Internet, the server, the intranet and the desktop? Why should I care where information actually resides as long as I can get to it the same way I get to any other piece of information on my PC or LAN?

There's no law that says it's better to access the Internet using a stand-alone browser. This belief persists, but it is perpetuated primarily by the at-home Internet addicts from whence it came and to whom it is necessary. The problem with the direction taken by companies such as Netscape Communications Corp. is that it perpetuates Internet service boundaries and makes them even more pronounced and more evident on business users' desktops by delivering products that are uniquely focused on the World Wide Web browsers the companies sell. Microsoft, on the other hand, will Internet-enable an entire product line at its most basic level of functionality. And that, coincidentally, serves to make Internet service boundaries disappear altogether.

I'm sure Microsoft will add more of the cool surfing stuff that keeps millions of people up all night at home. But the business value of Microsoft's Internet strategy is that using the Internet will be much like using other workaday tools and applications.

Are you looking for evidence that Microsoft's direction is consistent integration? Turn to integrated product add-ons such as ShellView, or Explorer 3.0, which allows Windows 95 and Windows NT users to browse Web resources as though they were nodes on a directory tree and local drives and folders as though they were links on a Web page. Or Sweeper, the set of application programs

ming interfaces that enables developers to fully integrate all the text, graphics, audio and video capabilities of Web services into any application as though they were part of the core operating system, and vice versa. The list goes on.

At Owens Corning, we're using Microsoft Internet products to facilitate an intranet service that focuses on how staff members view internal documentation and where they go to look for it. Microsoft's Internet tools are nearly seamless with Office 95 suite products and with Windows NT services and access privileges, and they're definitely making intranet deployment a lot easier than products that operate as a separate function. For those of you with chief information officers and peers who, like mine, understand the value of integrated products and services, it's almost time to break out the cigars and open the champagne. You will soon be able to tell them how much money they're saving on product and implementation costs and on training end users in a completely different set of tools.

Some people argue that Microsoft could just buy the world, that it lacks any genuine vision for developing best-of-breed products for the Internet market. Others gloss over Microsoft's entry into this market as a well-funded case of the "me-too syndrome." I tend to think of Microsoft's emergence into this market as the intersection of the Big Bang Internet — the virtual overnight recognition by the rest of the world that the Internet exists — and Microsoft's simple realization that the Internet is the future. Delaying its entry into the Internet market much longer could have left Microsoft forever clinging to the outside of the most widely deployed client/server framework in the universe.

Saying that Netscape is more likely to succeed in the long run because it helped alert the world to the coolness of the Internet — which is the very sort of blind loyalty I see from many people — is like saying a rooster is the smartest animal in the barnyard because it was the first to crow when the sun came up. The founders of Netscape deserve recognition as bright and insightful people in this regard. They helped create the future. But that doesn't inherently position them to deliver the breadth of product capabilities and integration required to conduct business within the Internet framework.

Maybe Netscape's "N" logo should be emblazoned on weather vanes so we could tack them to the tops of our barns, but as for the farm itself, it's going to run a lot more effectively with fully integrated Internet solutions — such as those from Microsoft. ■



@Computerworld (<http://www.computerworld.com>) conducted a QuacPol to see where readers stand on the Netscape/Microsoft battle. The results, which are not scientific data, showed an awful lot of interest in the issue; there were 191 respondents. The \$64,000 question, of course, was, "Do you expect Microsoft Explorer

SoundOff!

to catch Netscape Navigator in browser market share in the next two years?" The result? Dead heat. Fifty percent said "Yes," 50% "No."

With results this tight, expect a hammer-and-tongs battle for the foreseeable future.

CATCH UP NETSCAPE?

Let's take a short quiz.

Question 1: What company dominates the Internet browser market?

Question 2: What company's name has been associated with the Internet by the mass media for the past year?

Question 3: What company in mid-1995 started a private communications network intended to compete with America Online, CompuServe and Prodigy, but is dramatically recasting the project after its initial approach floundered?

Answer 1: Netscape.

Answer 2: Netscape.

Answer 3: Microsoft (*The Microsoft Network*).

Nevertheless, many experts claim Microsoft will catch up and shortly become a dominant force in the Internet market. Why? Because Microsoft is big and rich, dominates all aspects of the PC market and is run by Bill Gates.

No one can argue the incredible success of Windows and Microsoft Office. But this success was handed to Microsoft on a silver platter, as the maker of the IBM-blessed operating system for the PC, Microsoft always had a clear advantage over its competition.

But the name "Microsoft" isn't associated with the Internet.

Try though he might, Gates will never convince the world that Microsoft invented the World Wide Web. And therein lies the biggest rub: Microsoft dominates only the markets over which it has control. And no one controls the Internet.

Does anyone remember the PS/2 and Micro Channel Architecture IBM, as big as it still is, has totally lost control of the PC market. Why? People simply love to strike back at the big guys who tell them what to do. And today, Microsoft tells us what to do with our PCs. If businesses think they spot a viable alternative to the Microsoft regime, they'll jump at the opportunity. When it comes to the Internet, that opportunity is Netscape. Because it was first, because it was originally free and because it's an excellent product, Netscape Navigator has a staggering lead over all its competitors — not just Microsoft.

Sure, Microsoft recently scored a coup when it signed deals making Explorer the default browser on AOL and CompuServe. But folks increasingly are dialing up the 'net through Internet service providers (ISP). And almost all ISPs in North America give their customers a copy of Netscape 1.x, a program they can distribute for free. So when new surfers crank up Netscape, they're greeted either by

their ISP's home page or by Netscape's. Both invite them to download Netscape 2.0.

In the business world, Netscape's lead is even more pronounced. Businesses that had standardized on Microsoft Windows 3.1 started acquiring Netscape licenses long before Explorer was available. Some business PC users haven't even seen Explorer.

As Arvin Industries implements its Internet strategy, a few dozen of its employees already are connected to the 'net via local ISPs — and all of them use Netscape. Interestingly enough, a handful of PC support folks are running Windows 95 for testing and evaluation purposes, but none of them uses Explorer. Why? Because they perceive Netscape as "The Browser Standard," much the same way they perceive Windows 3.1 or Windows 95 as "The PC Standard."

I asked why, and the answer that best represents the feeling of the PC community is: "Microsoft is PCs, but Netscape is the Internet." As Arvin establishes a presence on the Web, we plan to take a good look at some of Netscape's commerce servers to improve our customer service offerings. In this area, Netscape is way ahead of the competition. No one has asked for — or even asked — Explorer.

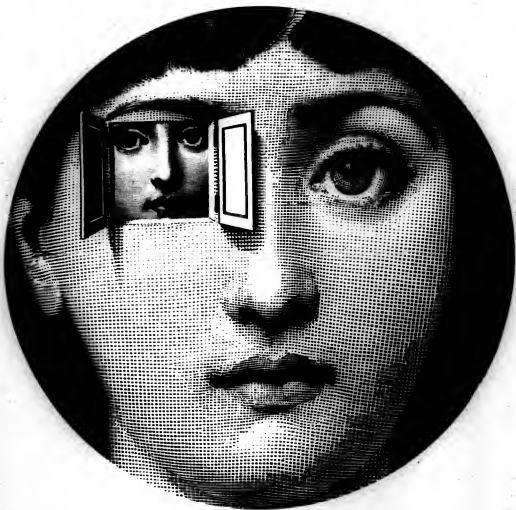
As commerce over the Internet grows in leaps and bounds, so does the number of installed copies of Netscape's server offerings, an arena in which Microsoft is all but unknown. As Netscape refines its server technology and adds symbiotic or synergistic features to its browsers, other browser makers must follow suit — including Microsoft.

Microsoft is the uncontested king of PC business software, minus the Internet browser part. But let's not forget that people browse the Internet from PCs, Macintoshes and Unix workstations. With its cross-platform product, Netscape has another clear advantage: Any business running these three popular platforms that wants to standardize on software wherever possible has to pick Netscape. And Netscape runs equally well under Windows 3.1, 3.11, 95 and NT.

In Netscape beating Microsoft at its own game? You bet. In Microsoft said as help? You bet. I don't think the company is mad at Netscape, though. It's mostly mad at itself for having missed the boat. And even if Microsoft's new offering is stellar, it won't dethrone Netscape, the uncontested king of the Web. This is one case where people won't switch software just because Microsoft makes it. ■

Don Moore, director of the corporate data center at Arvin Industries, Inc., thinks Microsoft started too late. Netscape owns the market and won't sit by and watch Microsoft — or anybody else — take it away.





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A01

Computer Careers

Intranet builders

By Roger L. Kay

We appear to be at the front edge of a wave of recruitment for Web-skilled people who build intranets — internal networks based on World Wide Web technology.

A year ago, Richard Balmer of Richard Balmer Associates, a high-tech recruitment firm in Concord, Mass., saw hardly any corporate requests for Web skills. Now, "In some situations, it's the hiring factor," he says.

But the best is yet to come. "A year from now, it will be a whole different marketplace," Balmer predicts. "We're just in the beginning stages, but Web technology is going to have a real impact on IS groups."

It's already difficult to hire people with the right combination of skills to implement intranets. Balmer says he got one Web-skilled client an offer that included a 30% raise and stock in a young company only to have the client accept a better offer.

"There is a sort of warming trend," Balmer says. "The market is very tight now, and skills in the Internet space are commanding top dollar."

People with these kinds of skills may have backgrounds not usually associated with traditional information systems training. Consider the following intranet builders:

Developer by design

CHRIS COBB, a technology engineer at Hewlett-Packard Co.'s Operating Systems Laboratory in Cupertino, Calif., is an intranet designer who sports straight-up IS credentials with a diversified history.

Cobb recently added the job of Web application developer to his roles as consultant and technical support specialist. His team is working with HP's corporate office to build a foundation for the company's intranet.

Cobb started as a programmer/analyst, moved to research and development and then handled systems administration for five years. He said he was drawn to desktop publishing early on and got caught up in graphic design issues. When the Web came along, Cobb evolved into a webmaster.

"The Web fundamentally changes the way we communicate around the company," he says. "We put all our documents up, and the latest copy is always there."

The skills you need

Q: WHAT DOES IT TAKE TO BUILD A GOOD INTRANET BUILD?

BALMER: You need [to know] Hypertext Markup Language, but it's a rather passive Internet language with a lot of limitations. [Sun Microsystems, Inc.'s] Java is getting wide acceptance. [You also need] a knowledge of networks, graphical user interfaces, networking protocols and browsers like Netscape and Mosaic.

PUGLIA: A webmaster should have a communications background with a sense of design and marketing as well as a strong computer background. Also critical are Web languages like HTML and Java and multimedia programming tools like Macromedia, Inc.'s Authorware and Director.

COBB: There are two sides of the house: the technical/programming side and the

art/design side. Desktop publishing is also a plus, as is systems design, programming, systems administration, network, business analysis skills and a willingness to embrace change.

OLGINS: I'd look for someone who has excellent communications skills, good leadership initiative and a solid Unix or [Windows] NT background, someone who can learn new technologies quickly. They ought to have HTML or at least C++ experience. I'd train them in Java.

Also, the graphic arts — traditional graphic design skills — are valuable. We have one guy [in graphic design] who is literate in C++ and HTML. He is educating the [other] designers to cast their designs so [they can be used easily on the Web].

Where to find them

Q: WHAT RESOURCES ARE AVAILABLE TO THOSE WHO WANT TO BONE UP ON THE WEB?

Right in tune



Sometimes a creative streak simply enhances a solid IS skill set. **SHERYL OLGINS**, who notes that her surname means silver-smith in Basque, is the lead software engineer in the engineering systems group at Harris Corp.'s electronic systems sector in Melbourne, Fla. She has a four-square IS background.

Olgins received her bachelor's degree in computer science at the University of California at Irvine and turned to IS management as a career. A year ago, she worked in C and C++, managed projects and provided Unix support to internal users in the various divisions at Harris. Today, she is a key player in the creation of InfoBase, the company's internal web.

"We're trying to take advantage of economies of scale by building a computing infrastructure that implements networking and applications for everyone rather than having fragmented islands of effort all over the corporation," Olgins says.

So what does this top-ranked engineer do in her spare time? Among other things, she records original songs as a singer/guitarist.

Artist's vision



JOHN PUGLIA, webmaster at Roadway Express Corp. in Akron, Ohio, and leader of the team that is planning Roadway's intranet development, started as an artist. Although his bachelor's degree is in communications, Puglia initially tried to major in two subjects. He was also interested in receiving a degree in fine arts with an emphasis in film and video.

In the corporate communications department at Roadway, Puglia used his Macintosh design talents to help develop a uniform message for the company. He was interested in how the firm's Web page looked and got involved in design.

"We didn't create a new position. I just accepted more responsibility," Puglia says. Puglia has a lot of faith in the future of webmastering. "It's definitely going to get hotter," he says of prospects for Web-skilled people in the intranet-building market. ■

Kay is a freelance writer in Weyland, Mass. He can be reached at RJKay@world.att.com.

Hot Web sites for intranet info

The Internet Journal
<http://www.bell.com/intranet/>

The "Intranet Journal" has all kinds of current information for webmasters working on intranets. It also links to other pages that offer related material.

* NCSA HTTP Home Page
<http://www.ncsa.uiuc.edu/>

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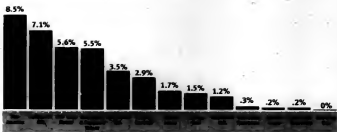
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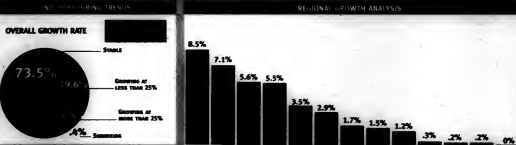
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PCs bring people face to face

By Alan R. Earls

Until recently, desktop videoconferencing systems had a reputation for jerky, flickering pictures and poor reliability exacerbated by an absence of standards. Getting different brands of equipment to communicate was problematic at best.

But the situation has changed almost overnight.

Driven by increasing competition, the desktop video market is growing rapidly in terms of the number of users and the systems capabilities being offered to them. Because of the introduction of inexpensive, clone-like video cameras for

use with PCs, hundreds of thousands of desktop video users are expected to become part of the videoconferencing universe this year.

Market blast

At least one analyst is convinced that built-in video will be the holiday trend bundled with many PCs at year's end.

Eliot Gold, president of Telespan Publishing Co. in Alhambra, Calif., has followed the market for several years. He says desktop videoconferencing systems were little more than expensive experiments as recently as three years ago.

But by 1994, companies such as PictureTel Corp. had pushed prices well below \$16,000 per

station, and overall sales had reached 30,000 units. Gold says sales for the market totaled 90,000 units last year and could reach 300,000 by the end of this year. He says a large part of that most recent growth has been in very inexpensive systems built around basic PC hardware and cameras that cost only about \$150.

Indeed, for users willing to accept baseline capabilities, it's possible to set up a desktop video system for less than \$1,000.

Will Strauss, president of Forward Concepts, a firm of analysts in Tempe, Ariz., says the communications infrastructure is also gearing up to support broader use of video.

"The new ITU H.324 standard is specifically designed to support low-quality video of 7 to 10 frame/sec." using plain old telephone service (POTS), Strauss says. "As we move toward the year 2000, it will get to the point that the only cost [of] running video will be the camera; everything else will be a normal built-in part of the PC."

The floodgates are opening on mass-market desktop video conferencing, but the high end of the market will need breakthroughs in terms of better and more imaginative ways of using the technology, analysts say.

Still, sophisticated users are learning to love pricier systems packed with capabilities that make those setups compatible with room-type systems.

Bruce Ryan, director and principal analyst of worldwide multimedia at Dataquest in San Jose, Calif., says these users typically are part of the address market for firms that have already invested in room-type systems.

These desktop systems often have features such as remote zoom and pan and the ability to integrate data and documents with the screen view.

William A. Miller, videoconferencing manager at Ernst & Young, says the typical industrial-strength desktop video includes the following:



James Mader, a communications specialist at Boston-based State Street Bank & Trust Co., uses a \$2,000 PictureTel desktop system to connect with an elaborate room-type setup at the company's London office. With the PictureTel system, Mader can pan and zoom to focus on individuals in London.

Images are sharp, which gives a "you-are-there" feel to the experience, he says.

Mader says effective desktop videoconferencing could cut company travel costs dramatically. A trip to London, he notes, "could easily cost \$5,000 compared to \$295 per hour for videoconferencing time."

Desktop videoconferencing isn't used just to reduce expensive executive travel.

Penny S. Turgeon, director of the Institutional Media Center at Worcester Polytechnic Institute in Worcester, Mass., says desktop systems are used to provide "electronic office hours" for faculty working with distance learning programs. Employers also use the systems to interview graduating seniors.

Turgeon says standards have made incompatibility problems a misnomer.

But Strauss cautions that transmission via POTS is problematic. Respectable performance comes when systems can connect via Integrated Services Digital Network (ISDN) lines.

"The telephone companies all say they have ISDN, but in reality it is widely available on the Pacific Coast and practically nonexistent in places [such as] Arizona or the Northeast," he says.

Earls is a freelance writer in Franklin, Mass.

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Correction

Over the past few years, several publications have predicted the demise of the mainframe. This was a typographical error. What they meant was the "rise" of the mainframe, not the "demise," since the increasingly networked world is driving record volumes of IBM's largest enterprise servers, which are now hosting some of the hottest live content on the Web. This entirely human mistake in no way calls for lavish coverage of our new S/390 servers, but who are we to oppose that impulse?

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Great balls of firewalls

By Steve Alexander

Investors seeking to catch a flaming portion of the red-hot Internet market — firewall technology — have limited choices in terms of a pure play.

Only two of about 30 small companies in the field have had initial public offerings (IPO). Secure Computing Corp. (Nasdaq:SCUR) of Roseville, Minn., went public in November at \$16 a share. Raptor Systems, Inc. (Nasdaq:RAPT) of Waltham, Mass., went public in December at \$12 a share. Both stocks lately have been trading from about \$25 to \$30 per share.

"This market really embodies the hypergrowth and incredibly rapid evolution of the Internet generally," says Ted

Julian, research manager for Internet commerce at International Data Corp. (IDC) in Framingham, Mass.

The firewall market will grow from \$160 million in 1995 to \$980 million by the year 2000, an IDC study predicts. Market leaders, by order of revenue-producing shipments in 1995, are CheckPoint Software Technologies, Inc. of Redwood City, Calif., Border Network Technologies, Inc. of Toronto, Trusted Information Systems, Inc. of Glenwood, Md., Raptor and Secure Computing.

Analysts expect one or two more companies to go public. Julian says CheckPoint is a likely candidate.

To pick a firewall stock, investors should look for the companies that have the most competitive technology, the

highest quality management and the strongest marketing relationships, analysts say.

Raptor and Secure Computing have comparable technology, but Raptor has the edge in management and marketing relationships, says Todd Dagres, a general partner in Battery Ventures in Boston. He cites a reseller agreement Raptor has with Hewlett-Packard Co. In addition, Compaq Computer invested \$5 million in Raptor just before its IPO.

"Raptor clearly gets good marks for technology and management team, and very good marks in terms of distribution," says Mark D'Annunzio, an analyst at Adams, Harkness & Hill, Inc., a Boston investment banking firm.

Paul Merenbloom, an analyst with Piper Jaffray, Inc. in

Minneapolis, says Secure Computing and Raptor are of comparable investment quality.

"There is no question that Raptor has a better image on Wall Street than Secure does today, but I don't know that there is any technical basis for it," Merenbloom says. "Raptor has presented and demonstrated a complete vision of what a firewall should be from the IS manager point of view. The question that remains to be answered is: Can they deliver what they have promised in a timely fashion and at the price points they have discussed?"

Investors should keep in mind that with 30 small players and many large computer firms entering the firewall market, a shakeout is inevitable.

"The market is just big enough for dozens of public companies," Dagres says. "I expect one or two more to go public in the next year, then we'll see a consolidation of both public and private companies. If others go public after that, they'll go at low valuations." ■

Alexander is a freelance writer based in Edina, Minn.

Opinion

Bradley Biederman

The wild worth of software

Valuing a software company has always been a challenge. Most technology companies survive and grow based on their ability to convert intellectual property into marketable products and services. But now a recent article in *BusinessWeek* ("The Technology Paradox," March 6) suggests that the incremental cost of acquiring upgraded technology is falling to zero.

And yet the past two years have wit-

nessed deals reflecting huge valuations of software companies. IBM acquired Lotus Development Corp. for nearly twice its stock price. Microsoft Corp. attempted to acquire Intuit, Inc. for \$1.5 billion.

If the price of technology is truly approaching zero, then what is producing these lofty valuations?

The answer is that the market's opinion of what constitutes a valuable soft-

ware company has changed. Computer memory is abundant, so tight computer code is no longer inherently valuable. Rather, speed in introducing new products and regular updates has become a critical factor. This means that traditional valuation methods, such as income or market approaches, are no longer as reliable as they once were.

As the software industry evolves, the following factors are becoming more important in company valuation:

- **Patronage:** The relationships and reputation a company develops with its customers and the marketplace.
- **Ability to exploit opportunities:** The company's prospects for leveraging its relationships, ventures and alliances.
- **Market share and size:** Although market share has always been impor-



tant in valuation, command of a large share is becoming critical.

In addition, size of the company becomes more valuable as the industry evolves from small, entrepreneurial firms to large, aggressive, well-financed businesses.

- **Employees:** A small, closely held software business truly approaches its liquidation value every night as its most important assets, its employees, walk out the door. An appraiser must identify who will be providing the programming talent, creativity and relationships three to five years from now. ■

Biederman is a vice president in the Corporate Finance Department of Altech, Melvin and Glass LLP, a national CPA and consulting firm. He can be reached at (312) 387-2845.

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Cisco spends big

CONTINUED FROM PAGE 1

(see time line).

Six years ago, the company had only \$50 million in revenue.

"A company has to decide what role it wants in the industry," explained the low-key but hard-charging Chambers in an interview with *Computerworld*. "If you want to speculate, you can be a loner. But it won't allow you to be a top-tier [network] industry player. To do that, acquisitions are a must to gain critical mass."

Chambers, who makes unrelenting calls to customers and recently broke bread with Eric Benham, CEO at rival 3Com Corp., laid out Cisco's acquisition strategy. Buy small companies with big reputations for pioneering new and more advanced networking technologies.

Cisco's deeply analytical strategy, which rivals have called mad news, has analysts shaking their heads in admiration. No matter how you view it, the game plan has so far left competitors struggling to keep pace or huddled around their core product lines.

So while rivals such as Cabletron Systems, Inc. and Bay Networks, Inc. hunker down to focus on switching and remote access, the forward-thinking Cisco has quickly entered the burgeoning internet market through three acquisitions and, with last week's proposed takeover of StrataCom, the carrier switch market. It has also successfully completed six

other acquisitions.

There's little wonder then that analysts give Chambers' strategy the thumbs-up.

"There is no comparably structured vendor to compete with Cisco," said Paul Weinstein, a financial analyst at PaineWebber, Inc. in San Francisco. He said a combination of Cabotnet for switching, Ascend Communications, Inc. for remote access and Cascade Communications Corp. for wide-area network switches would be similar to what Cisco will become after acquiring StrataCom.

Profits pave way

Cisco has paid for its acquisitions through profits generated via steady growth in router demand, coupled with soaring sales of LAN switches and remote office networking equipment.

"At times, you wonder how these acquisitions are going to be paid for, but Cisco has pulled it off. Sure, they're risking that the StrataCom acquisition [won't] result in a big financial hit, but I think it will," said Barbara Massak, director of computing at Emory University's Rollins School of Public Health in Atlanta.

But Cisco's spending and aggressive serve doesn't stop with buying other vendors. In an era of rampant downsizing and massive layoffs, Cisco was looking to fill more than 600 jobs last week.

Stealing a page from major league sports, Cisco has been offering certain job applicants five-

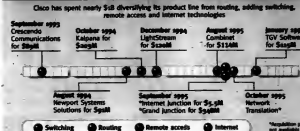


figure signing bonuses to join the company. In particular, Cisco has been raiding the internet community for marketing expertise and rivals for engineering and management talent.

"It's unreal," said one Cisco job candidate who requested anonymity. "Money really doesn't seem to fast them. Getting the research and talent to sustain their drive into new markets seems to be the top priority."

Chambers, who served at IBM, has been especially successful hiring service management away from that company.

One thing he won't borrow from IBM is its layoff policy, despite the many Cisco acquisitions he has overseen.

"[Chambers] laid off thousands of workers when he was at Wang, and he absolutely despised having to do it," said one Cisco confidant. "He's told me he never wants to do that again."

No wrong moves

So far, Cisco doesn't seem to have made any missteps.

"I don't see any drawbacks to what Cisco has been doing over the past several years," said Dave Meyer, a senior network engineer at the University of Oregon in Eugene. "I had doubted them early on, but they've done an excellent job bringing together a complete and flexible switching product line without giving short shrift to their router families."

Asked how Cisco has fared logistically, culturally and financially through the first nine acquisitions, Meyer said, "There's been no rough road, no management or staff turnover and no disappointing earnings reports. They've shown there is a method to what many had thought was madness."

Other users agreed with Meyer and are waiting to see how mergers No. 10 works.

"Financially, I think it's a good acquisition," Weinstein said. "There'll be some dilution, but I

expect their future earnings to cover it. And they'll reap big [benefits] from StrataCom's business."

Smooth sailing

User say Cisco is uniquely positioned for the future.

"This deal makes a lot of sense because the vendor of the future needs to be able to address users' switching needs for the entire enterprise," said John Scagien, director of network operations at Delmarva Power & Light Co. in Newark, Del., where the firm spent more than \$750,000 on Cisco gear

last year. "They'll pick up lots of valuable experience in networking outside the campus."

The key, of course, is whether Cisco can sustain the pace. Users such as Mike Smith, head of telecommunications at Credit Suisse in New York, are cautiously optimistic.

"I think we'll take a wait-and-see approach on this," he said. "They have solid engineering and great support, and buying these different companies will widen their focus. But I hope they can pull this one off without their core products suffering."

User log-ins simplified

By Mitch Wagner

VeriSign, Inc. today will introduce software that eliminates the need to keep a long list of user identifications and passwords for Web sites that require log-ins.

VeriSign in Mountain View, Calif., hopes to use the technology as a foundation for electronic commerce and internet security.

VeriSign's Digital ID Center allows end users to receive data "certificates" that distinguish them from other users on the Internet. Once the certificate is stored in the user's World Wide Web browser, the user can automatically register with sites that require log-ins.

Netscap Communications Corp. is building support for the feature in Version 3.0 of its Netscape Navigator. Meanwhile, VeriSign expects to make the certificate technology work with Microsoft Corp.'s Explorer and Spyglass, Inc.'s Mosaic.

The service is free for low-level secure IDs, with support for highly secure IDs available this summer for \$12 per person per year.

On the server side, Netscape will release Netscape Certificate Server. It will let companies issue VeriSign digital certificates to com-

putal access to internet Web sites.

For instance, a company could issue certificates to its accounting staff that give them access to confidential financial information on one Web site but bar them from accessing confidential engineering information on another.

The Certificate Server will be available in the third quarter on Windows NT and Unix platforms. It will cost about \$995.

Solution to this week's crossword puzzle

1 Across: CHAIR
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Computer trade shows

Computerworld crossword by Rick Bennett

Where else do you find high-tech executives standing in line for 45 minutes so they can get free blinking beanie's?

ACROSS

- 1 String connecting two rocks
5 Keep as is
9 Expresses pleasure
13 Arabian puff
14 River craft
16 Quick -- font type
17 TRADE SHOW TARGETS
19 Lake or canal
20 App. Software Giant
23 NYC opera house
25 An old aromatic ointment
27 Mexican Indian
28 DEX/SCO CONFERENCE SUBJECT
30 Baffling characteristic of young female

- 30 Novel's home
31 UNIX SHOW
33 Leisurely stroll
37 PC graphics card, for short
38 XL B&D facility, for short
41 Mandala's party
42 Slender woman
43 HIGH TRAFFIC BOOTH DEMO
48 Rap sheet letters
51 Covered with or tinged with gold
52 GUARANTEED VIEWER OF 45 ACROSS
56 Stapl (musical)
57 At the peak
58 Former energy agency init.
59 D follower
60 Frank Herbert's best-selling sci-fi novel

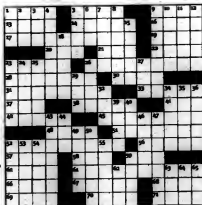
- 61 THE BIG TRADE SHOW
64 German river
67 Film's ruddy field
68 Type of tree
69 LA law actress and family
70 Current sales fields, for short
71 Conductor precursor

DOWN

- 1 Just like Lelloy Brown
2 A lyric poem with complex stanza forms
3 Bulgaria
4 Personal reflexive object of a verb or preposition
5 Whose is Unix?

- 6 Began surveillance
7 Therapeutic injection
8 Matador
9 A benign epithelial tumor of glandular origin
10 Chilean pianist Claudio
11 Body coverings
12 Scandinavian native
13 Formed by reaction between an acid and an alcohol with elimination of water
14 Corporate computer czar in city of 69 across?
15 Chills and fits
16 Attractive
17 TYPICAL SOFTWARE OFFER

- 26 Southern lark
27 Opposite of square
29 SIGN OF TRADE SUCCESS
30 XV years before the Battle of Hastings
34 Yemen capital
35 Semioyedic
36 Three tricos sans one
37 Cry precursor
40 Heat to raise 1b H₂O from 60 to 61 deg. F at 1 atmos.
43 Disposable diaper brand
44 Babes follower
46 The Muse of lyric and love poetry
47 Refurbishes
49 Particular apple in a yegg's eye



No. 6

Solutions on previous page.

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- 50 Unswearing in purpose
51 WHAT ONE DID AT 61 ACROSS?
53 Musical piece

- 54 Skippy (cat)
55 Great brilliance
59 Scores big-time
62 Old Ford model

- 63 "Live and Let -"
64 Wood
65 63 DOWN plus IV

Inside Lines

Ellison hype grounded by Boeing

According to an IDC News Service report, Oracle CEO Larry Ellison earlier this month wowed the audience at the Oracle Users' Group Conference in Amsterdam when he said Boeing had ordered 100,000 of the company's much-touted but still-unavailable Network Computers. But he forgot to inform Boeing: "We have not ordered 100,000 Network Computers. We haven't ordered any Network Computers," said Bob Jorgensen, a spokesman at the aircraft manufacturer in Seattle. He said Boeing is having an "ongoing conversation" with Oracle about the deal, \$500 unit made for accessing the Internet. But "we've made no commitment to purchase it."

Is there life on \$2440FX?

New Pentium Pro desktops, powered by Intel's new 82440FX chip set (formerly known by the more astute name Marv), will appear from both Dell and AST Research in early June, sources said. The new chip set will help reduce the price of motherboards used in the PCs, dropping Pentium Pro desktop prices below \$3,000, industry analysts said.

HP digs into the data mine

Looking to get into the high-end data warehousing and data mining markets, Hewlett-Packard on May 15 will introduce a commercial version of the Enterprise Parallel Server (EPS) line that it released last fall for technical computing uses. The EPS system link to 32 HP 9000 symmetrical multiprocessing servers via a Fibre Channel interconnect.

Not just for hackers anymore

Phrack Magazine and Cult of the Dead Cow said their annual summer hackers' conference, SummerSec '96, will be open to all. Previously invitation-only, the event now serves "Hackers, Phreaks, Pirates, Virus Writers, Law Enforcement Officials, Vigilantes, Neo-Hippies, Secret Agents, Disgruntled Employees, Teiko Flunkies, Journalists, Conspiracy Nuts, Nudists and Rag Sucking Wankers."

The 5th Wave by Rich Tennant



"SINCE WE GOT IT, HE HURST NEEDED FROM THE SITE FOR EIGHTEN STRAIGHT DAYS. CODY ENOUGH, THEY CALL THIS GETTING UP AND PLANNING ON THE INTERNET."

na-bes." For more information, send E-mail to scott@2600.com.

Eliminate the middleman

Users can save money by replacing middleman hubs with direct connections from desktop computers to Ethernet switching hubs, by adding Cisco's Group Switching Module to the Catalyst 5000 switching hub. The module, to be unveiled this week, will cost less than \$100 per unit and ship in July.

Webheads in stocking caps

PC maker Gateway 2000 got more than a few electronic chuckles with a help wanted ad it posted last week to a couple of Usenet newsgroups. The company wants you if you have HTML skills and like "limited personal space, buildings painted like Holstern, occasional blazards and a cut-and-dried Internet project." The ad sources prospects that "country to what you may have heard, South Dakota is not a square state and enjoys a warm, tropical climate."

We sometimes suspect that press releases from public relations staffers are formulaic. But this week came the proof. An announcement from I.D.E. Corp., touting the benefits of its software that gives Web browser capabilities to terminals in SNA networks, included this quote: "Internet Terminal Server gives XX company new, flexible, Internet-based networking options and brings our SNA terminal users into the corporate applications fold," said XX customer, XX company. "If you have press releases with bits of Xs, don't send them to us. But if you have red-hot news tips, be sure to get in touch with news editor Tim Kink, who can be reached at (508) 829-8183 or via the Internet at patricia_kink@ide.com."

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THE NEW DIGITAL ECONOMY

BUSINESS GETS A NEW TWIST
AS COMPANIES GET
WEB'D FOR COMMERCE

by
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The great bandwidth debate:
security fact and fiction,
org. chart revisions

A culture clash ensues
as old meets new

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COMPUTERWORLD ELECTRONIC COMMERCE JOURNAL

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Computerworld Electronic Commerce Journal

This special magazine, from Computerworld's Journals Group is published to provide you with a very focused perspective on the technologies and management disciplines needed to build electronically-enabled business processes.

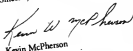
Through the pages of our weekly newspaper, Computerworld, our editors bring you the latest news and analyses on developments impacting this critical frontier of the Internet and the related tools organizations will need to conduct electronic business. Computerworld Electronic Commerce Journal extends this news with an in depth and provocative look at the issues and challenges you must meet and overcome as you weave the electronic fabric throughout your extended enterprise.

In this first issue of Computerworld Electronic Journal we bring you coverage concerning business-to-business and business-to-consumer electronic commerce and how these applications are being combined to derive operational benefit. We believe this is a perspective not offered in any other IT publication today. We look at the Internet as an enabling tool for applications such as electronic data interchange but only one of the necessary tools.

A second issue of Computerworld Electronic Commerce Journal will be published in September, continuing our commitment to providing Computerworld subscribers with the specialized information they need to achieve success with electronic commerce.

After reading this premiere issue of Computerworld Electronic Commerce Journal, please E-mail your comments to either one or both of us at the addresses below. Your feedback is invaluable as we plan our September issue.

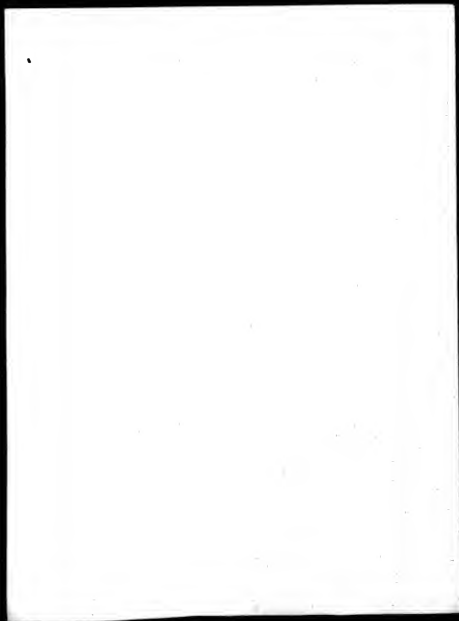
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FEATURE STORY



UNCOMMON COMMERCE

18 Even if you wanted to escape the Internet and the Web, you couldn't, with all the hype and coverage. But does the 'net have what it takes for electronic commerce? Yes and no. Issues such as payment and security are not hammered out. Yet companies from Alaska Airlines to Bank of America are working these glitches out.

BANDWIDTH: It's The Bandwidth, Stupid ... Or Is It?

20 With slow access lines and modems, 'net performance takes a beating. But pioneers claim bandwidth is second to other, more important infrastructure issues.
By Jeremy Schlossberg

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28 Security is like the presidential campaign: Perception is bigger than reality. Despite advancements, fear of the 'net will keep a lot of companies from full electronic commerce deployment.
By Rochelle Garner

DATABASE INTEGRATION: Unlocking The Database Door

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By Mark Halper

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32 Most firms embarking on Web-enabled electronic commerce focus on the technology. But that's only half the equation: The other half is managing changing relationships and departmental roles.
By Alice LaPlante

COMPUTERWORLD ELECTRONIC COMMERCE JOURNAL

SUPPLEMENT TO COMPUTERWORLD

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A Portrait Of Electronic Commerce

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Don't Try This @Home

34 Everyone would agree that the Internet is wild and woolly, compared with the value-added networks of EDI. And though the 'net may never equal the tame world of EDI, it could come close. EDI vendors are promising to unbundle their services on the Internet, and smaller companies are attracted to the accessibility and lower costs.
By Tony Boer

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THE EXCHANGE

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JUST ASK US.

At Apple Computer Corp., the search for a better way never ends. When it came to reengineering the company's sales and distribution process, their search led them to Sterling Commerce.

Updating the process required a high degree of automation, which meant large amounts of data needed to be exchanged between various internal applications and systems. By using Sterling's CONNECT products, Apple can now link a greatly varied mix of legacy applications, operating systems and new applications, like R3[®] from SAP[®].

Ship notices, customer orders, invoices and more now flow freely between order entry, product distribution and transportation operations across the company. It's all done automatically, with minimal human intervention. All day, every day. And it's saving Apple money while they make reengineering and process changes. While we won't go so far as to say it's sales and distribution paradise, at Sterling Commerce we think Apple's pretty close.

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| ☐ Using the Internet for EC | ☐ Internet/Internet data security and firewalls |
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EDITOR'S NOTE

Stepping Gingerly into the Electronic Commerce Zone

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Welcome. You've just entered the electronic commerce zone! Station stop: the Internet and the World Wide Web. You've arrived at the brink of the so-called "digital economy," where traditional analog business borders cease to exist and technological ties extend well beyond fax machines and EDI networks.

At least, that's the way it's supposed to work!

The first thing you'll notice is that the Internet's belyway of Web sites is more like a side street Persian bazaar than a major commercial shopping thoroughfare. There's lots

money (debit accounts or funds transfers).

That's why the premier issue of *Computerworld Electronic Commerce Journal* explores the Web's thorny infrastructure shortcomings and the many remedies poised to go mainstream over the next few months or so. We examine this from a multiplicity of vantage points: from bandwidth and security concerns to Web/database coexistence to even the organizational makeovers and cultural shifts needed to make Web-based electronic commerce a reality.

Electronic Commerce Journal's sojourn may start with the white-hot Web, but the

The 'NET is more like a side street
Persian bazaar than a major
commercial **SHOPPING** thoroughfare.
There's lots of hustle and bustle,
product **HAWKING** and proselytizing.



of hustle and bustle, product hawking (colorful brochureware) and proselytizing, if you call digital malls and catalogs electronic commerce.

But you'll need to have credit-card dollars to burn (risk?) and the patience of a saint (let's face it, the Internet's no screamer most hours of the day) to join in the fun.

You'll also notice few business-to-business transactions going on, at least if you compare it with the transaction volumes coursing through value-added network providers or private corporate 'nets.

That's because the Internet was built not for conducting trade but for information and idea sharing — scientific and defense-oriented data, at that. The 'net still doesn't provide reliability and robustness (speed of service); bullet-proof integrity and authentication (for validating trading partners and encrypting transactions); or a foolproof way to collect

money (debit accounts or funds transfers).
Future *Electronic Commerce Journal* issues will visit a broad terrain of topics, including the evolution of virtual corporations and the tightening of bonds between suppliers, distributors, retailers and end customers via the Web, E-mail, fax, EDI, collaborative software and videoconferencing.

We hope you'll join us and offer suggested stopping points along the way (see my E-mail address below) to make our journey more instructive and fulfilling.

So step gingerly and don your hard hat. Our first stop, an exploration of electronic commerce's underpinnings, is a "site" definitely under construction.

Alan Alper

INTERNET: alan_alper@cw.com

HOW CAN I GET OUR ELECTRONIC COMMERCE PROGRAM UP TO SPEED?

JUST ASK US.

When independent tire retailer Les Schwab gave Sterling Commerce the green light to help develop its EC program, an important goal was to streamline relations with large vendors — improving accuracy and reducing turnaround time. The question was, how? Using one major supplier for the road test, Sterling Commerce helped augment an innovative system to gather purchase orders nightly from Les Schwab's 262 stores, send them to the chosen supplier and receive invoices in return. The result? 30,000 invoices/year from that vendor alone are processed electronically.

In fact, Les Schwab can now process 600 invoices in three hours instead of three days. And because the process is 100% automated, accuracy has also improved. The wheels are turning, and now Sterling Commerce is helping Les Schwab shift its electronic commerce program into high gear.



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THE Exchange

MARKET, FROM MANUFACTURING TO ELECTRONIC COMMERCE

On-line Catalogs Are Booting Up



Business-to-business catalogs are seen as the first major application on the 'net

What costs \$8 million to \$10 million a year and is out of date as soon as it's finished? Paper-based catalogs of electronic parts at AME Inc., an electronics manufacturer in Harrisburg, Pa. "Paper is terrible," said Jim Kessler, director of global electronic commerce. "As soon as you ship, the information could be a month out of date."

It's a well-known problem for manufacturers such as AMP (www.connectamp.com), which publishes 400 catalogs a year with life spans averaging 24 months. In addition to cost, catalogs are search-intensive for customers.

Which is why experts predict the quick rise of business-to-business electronic catalogs on the Internet—one of the

few ways to provide quick searches of up-to-the-minute data for a relatively low cost.

Already, whole businesses are being built around the electronic catalog concept. There's Part.Net (www.part.net), a service run by N-Tec in Salt Lake City that enables attribute searches among manufacturers. Then there's Pittsburgh-based Industry.Net (www.industry.net), which is more like a directory service that represents subscribers on the site.

Sagqura Systems, Inc. in Sunnyvale, Calif. (www.sagqura.com), offers shrink-wrapped catalog software called StepSearch. In fact, AMP is one of Sagqura's biggest customers. Using Sagqura's design and integration services, AMP launched its on-line catalog in January.

The search engine is built on Oracle Corp.'s Oracle7 database and runs on a 34C-byte, four-processor Sun Microsystems, Inc. SPARC 1000. Particularly innovative is that the system is not based on static pages, each search is customized, based on parameters input by the user.

But AMP is definitely walking before it runs. Users cannot yet place orders or access price or availability. This is par for the course. Among Part.Net's 15 or so subscribers,

only a few enable users to order over the Internet. By year's end, AMP hopes to link the server on the public side of its firewall into its corporate databases, enabling ordering.

Even without ordering, AMP anticipates a one-year return on investment for the \$1.5 million to \$2 million project. Expected savings will come from reduced publishing costs, telecommunications costs and phone support.

Already, an industry debate is raging over which model will survive: companies producing their own catalogs and being represented in a forum such as Industry.Net or the Part.Net model, which pits vendors against one another.

There's room for both, said Michael Sullivan-Trainer, an analyst at International Data Corp. in Framingham, Mass. "The business-to-business catalog has two flavors: one for secured, continuing clients, the other to generate new relationships. The secure one will likely be hosted on an internal Web site with special access granted to business partners. The other catalog will likely be hosted in public forums."

—MARY BRANDEL



COMMERCE BY NUMBERS

Developers are spending from \$400,000 to \$1.25 million to develop Internet-based Internet storefront sites — four times more than expected. Development takes one year — twice as long as expected.

STAFFING, DESIGN AND DEVELOPMENT	64%
SOFTWARE	16%
SUPPORT FOR 12 MONTHS	16%
OFF-THE-SHELF SOFTWARE	4%

Source: Digital Survey International Data Corp. with Comnet, Inc.

Meanwhile, businesses plan their own on-line storefronts.

PERIODIC PAPER PERIODIC E-MAIL	39%
CUSTOMER SERVICE	38%
PRODUCT CATALOGS	34%
NEW DATA TRANSMISSIONS	27%

Source: IBM Business Source: The IBM Group Ltd.

Electronic is growing at more than 30% per year. E-mail, Web is leading the way. The total electronic market (\$40.5B to \$100B).

EMAIL/WEB	26%
OTHER INTERNET/ONLINE TRANSACTION	34%
FAX	47%

Source: The ETC Group

What's In a Name, In Case You're Wondering

A rash of new job titles reveals that electronic commerce is making its mark

BY MARK HALPER

Look closely at that pocketful of business cards you came home with from the last Internet or information systems conference, and you might notice something different.

In a sign of the times, corporations are beginning to bestow "electronic commerce" titles on the individuals charged with developing and maintaining the on-line conduits and meeting places for vendors and customers.

"You're seeing an evolution from the old days, when people had titles like EDI director," said Jonathan Morell, a principal member of the technical staff at the Industrial

Technology Institute's Center for Electronic Commerce in Ann Arbor, Mich. "Now there are a lot more business processes and more technology to it, and that's reflected in the new titles."

Andrew Gammuto is one of the new club's members. As support leader of electronic commerce at Baltimore Gas & Electric Co., Gammuto couldn't be more on the edge of change. He keeps up with the rapidly evolving Internet and Web technologies.

But also, as BG&E breaks out of its protective shell into a competitive, deregulated environment, he will be helping the utility find new services to market and new ways to market them.

One massive undertaking involves tying the company's mainframe-based customer



support and billing system to its Web site so customers can get usage quotes or bill status off the Web. Such services are necessary as consumers win more regulatory approval to choose their power providers. BG&E can also help customers select lower-rate hours for certain energy-consuming activities, such as running a washer and dryer, Gammuto said.

As manager of electronic

commerce at Campbell Soup Co. in Camden, N.J., Karen Ogren's role is similar to Gammuto's. "We have our foot halfway in every re-engineering project at the company," she said.

Ogren's group maintains inventory links with some of Campbell's customers and hopes to soon bring those customers

into Campbell's electronic mail system.

More electronic commerce managers are likely to appear. "It may just be that it's the right buzzword to use these days," Morell said.

"But then, electronic commerce has become more than just the exchange of structured business data,"

Halper is a freelance writer based in San Francisco.

THE NEXT 15 MINUTES

Many Web business CEOs have already enjoyed time in the spotlight



BY JIM HARRIS,
CEO, [INDUSTRY.NET](http://www.industry.net),
www.industry.net
Seven months after IBM bought billion-dollar Lotus, Harris joined this 3-year-old provider of business-to-business on-line

products and services. Industry.net is best known for its 28 on-line marketplaces that enable vendors to present their products and services to potential buyers. The company claims to have 4,000 subscribers and 120,000 buyers. It plans to help launch on-line transactions sometime this year.



BY GARY DICKMAN,
CEO, OPEN MARKET,
INC., www.openmarket.com
Before joining Open Market in December 1995, Dickman held executive positions at two very traditional

systems providers. He was general manager of the medical products group and senior vice president and servers at Hewlett-Packard Co. In addition, he held executive roles at Digital Equipment Corp. Founded in 1994, Open Market sells business software and services for the World Wide Web.



BY JEFF KAPLAN,
CEO, GIGALUX,
www.gigalux.com
Kaplan is best remembered as the founder of the Corp., the now-defunct maker of pen-based computers. As the Internet race in popularity,

he struck on the idea of real-time information services and in July 1994 formed his new Web business, GIGALUX. GIGALUX holds licenses for IBM, re-fabricated and cloned computers and electronics. Kaplan said he's had 300,000 visitors to date and has been profitable since November 1995.

IS ADDING ELECTRONIC TRADING PARTNERS

JUST ASK US.

That depends on how much time you have and what you're working on. When it came to building an electronic trading community, HWI — a hardware, building materials and lumber company — chose to rely on the electronic commerce craftsmen at Sterling Commerce. After surveying the situation, Sterling recommended its VIP trading partner program. Functioning as an extension of HWI's staff, Sterling's VIP experts handled everything from drafting trading partner solicitation letters to tracking responses to testing and certifying each trading partner.

In less than six months, Sterling Commerce had nailed down real results. 50 percent of the initial target group was on-board, and "the savings we've experienced with EDI far outweigh our implementation expense," relays Rob Palevich, HWI's Corporate Quick Response and Logistics Manager. With its solid construction and continuing additions, it's no wonder HWI dubbed this project a "Sterling success."



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Commerce**PULSE**

What's next in products and the market



While e-commerce is slow to start in many industries, the CD music business may be an exception. In fact, with successful Web businesses such as iTunes, it's too late to turn back as a CD Web retailer, said Pam Austin, director of product marketing at Comnet, Inc., an electronic commerce systems provider. So get on the Web now, she advised.

By December 1996, 29% of Fortune 500 companies with commercial Web sites will have stabilized or closed them, as "users who are underwhelmed by the 1995 content on the Web cancel and turn on their TVs," according to a December 1995 report by International Data Corp.

HOT SKILLS

HTML	57%
SERVER ADMINISTRATION	55%
DESKTOP SUPPORT	52%
WINDOWS NT SERVER	48%
UNIX	43%
SQL	39%
JAVA	38%
SOUND/VIDEO EDITING	28%
VRML	23%
CGI SCRIPTS	21%

Coffee grounds

Like a Java meter with that Internet heater? If Sun has its way, desktop Java cellular phones to printers will soon have embedded microprocessors optimized for Java-built applications.

Users of these vibrant machines, including a Sun-built Internet access device slated for delivery this year, could send and receive updates or multimedia data via the Web. Java browsers should help hardware companies ease the Java design for users. Code is reusable, it supports multithreaded operations, it's built for distributed computing, and it's web-browser-neutral. There will be whether Java's pretty enough.

Sneaking for trouble

Did you take the field of dress approach with your Web site (if you built it, they will come)? But if they

come, how will you manage traffic spikes or troubleshoot hot spots? Enter Network General and its family of load and performance management tools: Saffire Network Analyzer. The firm [www.age.com] is planning to unveil in June a module for its stand-alone and distributed Saffire products that will identify and analyze the leading communication problems supported by Netscape Web servers, including HTTP, Telnet, SMTP, FTP and Gopher. Web administrators will be able to see whether a router or server is overloaded with traffic, according to Mahesh Akhigde, a Network General senior product manager. They'll also be able to analyze throughput per connection and measure the time it takes for a "packet" command to travel from Web browser to server and back.

Product**WATCH**

Say goodbye to slow

Telecommunications and consumers can try out cable modems this year, as trials take into actual services. The modems, which receive data and data over fiber-optic lines, are expected to ship from AT&T, Southwestern, Networks and others. The biggest draw is speed: Cable modems can receive data at 400 MB/sec.—a lot faster than DSL, at 1200 MB/sec. Sending data is quite a bit slower, however, and standards have yet to be set. But services cost \$25 to \$40 per month for unlimited use, compared with DSL, which costs about \$40 per month before payphone fees, according to Forrester Research.

Pay-up time

Electronic payment is a major obstacle to electronic commerce, and VeriFone, Inc. wants to ease the solution. Veri-

Fone owns 85% of the U.S. retail cash-travel payment business. This year, it's predicted to release the first trials of a payment system for merchants, hotels, credit-card companies and consumers that it hopes will become the equivalent of that business for the Web. Later this year, VeriFone intends to provide an Internet interface to existing financial networks by combining VeriFone's gateway software with its payment software. For merchants, the company will handle its "virtual POS terminal" software with VeriFone's server. In the third quarter, VeriFone and Oracle will integrate Oracle's WebServer with the virtual POS product as merchants can process credit cards over the 'net. For consumers, VeriFone's Pay Window will be embedded into Oracle's PowerBrowser. The two will also create an Internet gateway to interface with legacy banking databases.

HOW DO I TAKE CUSTOMER SERVICE TO THE NEXT LEVEL?



JUST ASK US.

To get beyond typical customer service, you have to go beyond the typical customer service drill. That's exactly what Stanley Works, a worldwide tool and hardware manufacturer, did when it committed to a comprehensive electronic commerce program. With the help of Sterling Commerce, Stanley is reducing lead times and improving accuracy by doing business electronically. In many cases, lead time has been cut from six days to one day.

Currently, more than 80 percent of Stanley's consumer business documents — purchase orders, advance ship notices and invoices — are processed electronically, and Sterling Commerce is helping the company explore additional applications. By using electronic commerce, Stanley Works is better serving its customers, providing the right products at the right time in the right place. And that's a point worth hammering home.

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WHAT CAN I DO TO PUMP UP MY PRODUCTIVITY?

JUST ASK US.

What if you could eliminate the overhead of processing paper invoices? Substantially reduce inventory and warehouse costs? Or centralize EDI processing and file management? With help from electronic commerce expert Sterling Commerce, Mobil Corporation struck it rich, accomplishing all three and more.

In a global strategic alliance, Sterling Commerce is providing its CONNECT, COMMERCE and GENTRAN software and consulting services to support Mobil's incorporation of electronic commerce into all facets of the company. For Mobil, the partnership is changing the way they do business. "Mobil's productivity has increased dramatically during the eighteen months since we restructured our EDI operations," Roger Trout, Mobil's electronic commerce coordinator states proudly. Equally proud is Sterling, who in all that time, plus years before, has never lost a Mobil transaction.

Pretty slick. And it proves that even for a well-oiled EC operation like Mobil Corporation's, it pays to ask questions.



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The Vertical

A LOOK AT ELECTRONIC COMMERCE ACROSS VARIOUS INDUSTRY SEGMENTS

MANUFACTURING

Campbell Soups Up Inventory

The food giant plans an electronic means for customers to replenish shelves

BY MARK HALPER



When it comes to managing its finished goods inventory, Campbell Soup Co. has had a pretty good system going — if it needed to manage only 30% of its inventory. A 3090 mainframe receives daily updates from participating supermarkets, and when inventory dips, the system automatically replenishes the

soup, salsa or whatever other Campbell product is needed.

The problem, according to Ron Ferner, vice president of low-cost business systems at Camden, N.J.-based Campbell, is the other 70% of inventory not managed on the system. Many of Campbell's customers are not comfortable handing over their purchasing decisions to Campbell.

So Campbell, which has been running the mainframe-based customer replenishment system for about four years, is trying to create a system it hopes will cut inventory costs as dramatically as the mainframe system did. Not an easy

task, considering the mainframe topped \$60 million off hundreds of millions of dollars of annual inventory costs.

Ferner was certainly starting with a clean slate. The balance of orders the replenishment systems don't process are paper-based and prone to ending up in the wrong Campbell plants and offices.

The new electronic commerce system, which Ferner hopes to phase in by year's end, will be based on an IBM RS/6000 parallel processor running an Oracle Corp. database. It will house two components that take finished goods inventory information off an AS/400 and whip it into electronic commerce action.

Campbell has hired IBM's Integrated Systems Solutions Corp. to deploy and maintain the system.

One piece, an order processing application from Industri-Matematik, Inc. in Sweden, will let Campbell centralize orders now scattered throughout 13 regional offices. A second piece, from Rockville, Md.-based Marnagistics, Inc., will facilitate sales order forecasting and assist Campbell's inventory planning.

Here's how it works: Customers send an order to Campbell via MCI Mail. The Industri-Matematik system processes the order and

Please turn to next page

BIG SPENDERS

Government is the biggest spender in electronic commerce, according to projected figures. Investments by the U.S. go up to \$100 million.

GOVERNMENT

18%

TRANSPORTATION

10%

CONTINUOUS MANUFACTURING

10%

FINANCIAL SERVICES

6%

RETAIL

+%



GET VERTICAL

Continued from page 11 feeds it to the Managistics program. Managistics compares the order against inventory and rolling sales information, which can help sales managers decide how much of which products to make and where.

The system also tracks inventory and can advise customers when to replenish. It then electronically tells customers which goods are on their way and when they'll arrive. "Today, they have to wait until the truck shows up to see if they got what they asked for," Ferner said.

He declined to say how much the two components cost but said they are part of a \$26 million re-engineering project that affects other aspects of the company as well. For instance, the Oracle database serving the inventory and planning applications will anchor a central customer support and complaint center in Cherry Hill, N.J.

According to Ferner, customer support is in dire need of such an upgrade. "If I were a customer of Campbell Soup, sometimes I would wonder who to call for answers to my questions," he admitted.

Ferner declined to elaborate on Campbell's predicted return on its investment except to say that given the economies of scale derived from leveraging the RS/6000 across various operations, "we justified it."

Campbell has plenty of incentive to bring its RS/6000 projects in on schedule. "We're not going to miss a beat," Ferner said. "We can't afford to."

Hulper is a freelance writer based in San Francisco

INSURANCE

Is the World Ready for Web Quotes?



If anything could rock the insurance industry's conservative world, it's the World Wide

Web. The question is, are consumers and the industry ready for cyber insurance agents?

Pacific Specialty Insurance Co. apparently thinks so, as does the Utah division of Workmen's Auto Insurance Co. Both have signed on with InsWeb (www.insweb.com), a year-old company that intends to offer a Web-based comparative shopping service where consumers can purchase insurance and get competitive quotes on-line.

That's the vision. About 20 firms have signed on, but few are providing quotes or selling insurance. Pacific Specialty sells watercraft insurance, but Workmen's Auto generates quotes and refers consumers to an agent for purchasing.

Another service, QuickQuote Insurance Agency (www.quickquote.com), offers an interactive quoting and comparison system for term life insurance and fixed annuities. Users fill out on-line applications and receive five of the least expensive A rated term life or A+ rated annuities.

These services were first seen as a way to cut the high cost of using agents. But consumers might be squeamish about giving up private information, "especially for health and life insurance," said Barbara Striley, an analyst at

the Tower Group in Boston. That's why these services might be more attractive to agents.

"In the long term, people might go to the Web on their own. But they'll have to be educated as to whether a company is going to sell that information to someone else," said Stan Lepack, an analyst at Meta Group, Inc.

Even then, efficiencies will be reached only when Web forms are integrated with an agency automation or policy management system, said Debbie Wilson, president of DK Wilson Associates in Mississauga, Ontario.

It takes time for an insurer to reorganize itself, and "it's also a complicated task to allow insurers to sell insurance on-line" because of state regulations, said Darrell Tietburst, president of InsWeb.

And some observers don't see the Web as a place to buy insurance at all. "Where the Internet comes in is customer service. There's a richness there you're never going to get from a brochure or phone call," said Patrick Vice, proprietor of the Electric Coffeehouse, a consultancy in Toronto. ■

— MARY BRANDEL

GOVERNMENT

State DOA Bids Poky Paper Adieu



Nowhere is government bureaucracy more grating than in purchasing. Overburdened functionalities sink through reams of staid, often ancient paperwork

and/or microfiche to figure out which approved products are most cost-effective.

That approach didn't work in the past, let alone now when PCs and peripherals change configurations and prices as often as models change outfits at a fashion show.

To cut the best deals possible, a number of state governments are turning to the Web to invite bids and provide data on approved vendors.

Witness the state of North Carolina, which last July posted PC/peripheral pricing and request for proposal information on the state's Department of Administration (DOA) Web site (www.doa.state.nc.us/Purch/). In six months, roughly \$80 million in microcomputer purchases was made from contracts derived from the Web, according to King Prather, assistant purchasing administrator.

The key, Prather said, is that the Web lets him update pricing information within 24 hours to "wire" state agencies, towns and cities, public schools, state universities and hospitals. Data is supplied by vendors on Microsoft Corp.'s Word or Lotus Development Corp.'s 1-2-3, and an in-house-built macro generates appropriate Hypertext Markup Language (HTML) code. In the past, prices could be updated only monthly, at best.

In September, other commodities such as furniture contracts and bid data were added to the site. "Say a community college wants to install new bleachers. They can see if anyone else has purchased anything similar and share information with them," he said.

The DOA's purchasing and contracts home page received

Please turn to page 14

WHO CAN KEEP MY DATA COMMUNICATIONS SYSTEM HEALTHY?

JUST ASK US.

In the early 1990s, data communications at The BlueCross BlueShield Association, the country's largest Medicare Part A and federal employee insurer, needed a check-up. Twenty years of ad-hoc growth had resulted in a system of eight separate networks straining under the demands of 66 different plan organizations. The immense volume of data being moved — nearly \$4 billion in financial transactions each month — had caused the system to become unacceptably slow. So BlueCross BlueShield made an appointment with Sterling Commerce. "Sterling Commerce produces extremely scalable, reliable products," explains Jerry Wolltschid, the Association's unified network director. "That's why we selected CONNECT as the standard for all mainframe data communications."

By using CONNECT as an information networking infrastructure, BlueCross BlueShield has tripled its network capacity, transferring more than 100,000 batch files each month. The increased capabilities have also had a very pleasant side effect on the company's bottom line — a \$6 million savings in data communications expenses! At Sterling Commerce, that's what we call good medicine.

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Continued from page 12
over 10,000 hits in January.
"We believe that's the biggest
number of hits on the state's
home pages so far," said Dell
Pinkston, an information sys-
tems consultant on the project.

Because DOA IS staffers
were Web neophytes, they
built their site with what they
knew best: Microsoft's Fox-
pro for Windows 2.0. Multiple
tables were generated to
house the data. From there,
Foxpro reports were created
and enhanced with HTML.

An integrated purchasing
approach can't be divined until
the Web site links to the state's
new accounting system and all
state and municipal offices can
access the Internet.

Web applications "are a
priority, but it's hard to do.
There's no state mandate
[for access], and I don't have
control of everyone's bud-
get," said Bill Coleman, the
DOA's IS director. ■

— ALAN ALPER

FINANCE

Brokerages Invest In Web Futures



By year's end, a
number of in-
vestment firms
will offer Web-
based transac-
tion systems.

One of the first is Charles
Schwab. In March, a limited
number of customers began
checking balances and stock
quotes, placing trades and
changing orders over the
Internet via Netscape
browsers. Withdrawals re-
quire a phone call or elec-
tronic mail message, said

Art Shaw, senior vice presi-
dent of electronic brokerage
systems. The system will ex-
pand to the general public
this year.

By midyear, The Vanguard
Group, Inc. in Valley Forge,
Pa., plans to offer account
lookup, transfers, redemptions,
purchases and new
accounts over the Web. We
spoke with Bob DiStefano,
senior vice president of infor-
mation technology at The
Vanguard Group.

**EGJ: What is your philosophy
toward electronic commerce?**

DISTEFANO: If you view the
Web as the next 800 number,
you take a whole different at-
titude toward it. In the long run,
people will get over the tech-
nology. What matters is the

quality of content, the helpful-
ness of the people, the sophis-
tication of the information.

**EGJ: What are your thoughts
on security?**

DISTEFANO: Some people say
the Internet is not secure at all.
Others say it's more secure
than Touch-Tone. We're some-
where in between. By the end
of this year, there will be levels
of security at least as secure as
on Touch-Tone.

**EGJ: Is there one develop-
ment in particular that will
click it?**

DISTEFANO: Encryption capa-
bility at the browser level.

**EGJ: How does your own sys-
tem handle security?**

DISTEFANO: The first line of
defense is the policy deci-
sion. If you allow people to

redeem to a third party, your
exposure is greater than if
you allow them to redeem to
an existing record.

The other thing is encryption
and passwords. We in-
troduced a product last
August for 401K plan spon-
sors to check accounts on
our Web server (not through
the Internet) through a cus-
tomized Splyglass browser.
We could connect it to the
Internet, but we wanted to
further customize the brows-
er to prompt for passwords
and encrypt that informa-
tion.

For general Web access, we
have to deal with a variety of
browsers, so that's why we're
taking a bit longer there. ■

— MARY BRANDEL

HOT SHOPPING



HAWAII'S BEST ESPRESSO CO.

The husband and wife who own
this online retail store closed
shop and turned it into a 100%
Web business when their rent
skyrocketed. Visitors can buy
several varieties of Kona coffee
and have their order shipped
priority mail. Barg points are
low prices and easy ordering.



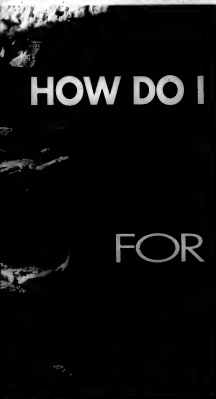
CDNOW THE INTERNET MUSIC SHOP

This venture was started by
26-year-old twin brothers in
Penslyn, Pa. The site claims
to offer every album sold in
the U.S. postage's two-day
delivery (\$4.95 minimum
charge) and accepts returns.
Visitors can order CDs via
credit card using Purity Guard
Privacy or PGP encryption.



VERSOURCE

This site sells over 10,000
software products from 600
publishers and components
for software developers. After
buyers fill out an order form,
their credit card is validated
and cleared for shipment and
electronic mail confirmation
is sent. According to Bill
McKinnon, CEO, the year-old
company generated \$1 million
in sales in 1995.



HOW DO I SATISFY A RETAILER'S APPETITE FOR ELECTRONIC COMMERCE?

JUST ASK US.

In the fall of 1995, gourmet food supplier Ham I Am! received a request for a new menu item: electronic commerce. A major retail customer had initiated EDI, and asked that all suppliers take its orders electronically. Based upon the customer's recommendation, Ham I Am! contacted Sterling Commerce for help.

Sterling Commerce went to work, serving up a PC/Windows®-based solution designed for the small company's special needs. "These were first steps for us," explains Ham I Am! co-owner Doak Sullivan. "We found the Sterling Commerce package to be very user-friendly, yet comprehensive enough to meet our needs." With electronic commerce now established, Ham I Am! is in a better position to attract and retain large customers. In fact, the company liked the taste of a more efficient operation and improved customer service so much, they've come back to Sterling Commerce for seconds, with plans to expand their EC program.



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Portrait of Electronic

Applications

EDI applications are typically used to transfer data between systems. For example, a company's system may generate purchase orders and pass a message to a supplier's system to determine quantities required.

Functions:

- Purchasing
- Accounts Payable
- General Ledger
- Inventory
- Asset Maintenance
- Cash Management

These applications send messages to the EC broker. Each message identifies the sender, the receiver, the message type (purchase order, receipt, etc.) and the message content. Messages are transported by a variety of methods (TCP/IP, X.400, BNA).

Chart source: Diagram provided by Jack Shaw, president of Electronic Commerce Strategies, a Marietta, Ga., consulting and law firm, the president of eMCA, Inc., in Pittsburgh, Pa., consultant Shaw can be reached at 412/468-0888. Fromshaw@emca.com. Which can be reached at 1000 912-6887. Fromshaw@emca.com.

The EC Broker

Brokers use X.400 directory services to look up addresses and route messages to a fax number or Internet, VAN or E-mail address. For traditional EDI, the electronic intermediary (EC) broker would also create the appropriate EDI format and route the message to the communications interface. EC brokers today use a suite of messaging management systems. EDI software's X.300 directory systems and storage systems. Soon, these brokers will also support Open EDI.

Functions:

- Archive
- Reporting
- Messaging
- Translation

The EC broker hands the properly addressed message to the communications interface. Acknowledgments and other responses are passed back to the EC broker for logging or forwarding back to the appropriate applications.

Communications Interface

This software module formats and transmits the message over one (or more) communications mediums. It was designed as a separate software component to allow for additional EC media in the future. While the EC broker handles authenticated information in plain text, the communications interface is responsible for all of the necessary security-related conversions. An example is Premises' Templar software.



An intelligent agent is a rule-based application that can transport itself from site to site over the Internet, in search of requested information. These products are just now emerging and include such concepts as Telemint and Soft-TLC.

Corporate Web Server

Commerce

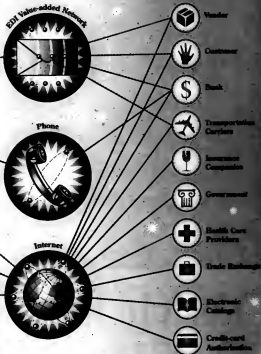
While few organizations have integrated all of the facilities described below, they are all available or being tested today.

External Network

Trading partners are accessible via telephone, public VAN or the Internet. Though not shown here, any trading partner could be accessed through any of the three network types.

Trading Partner

Trading partners are all other external organizations with which a company exchanges information. Each may have a Web site and/or a communications gateway.



ONE STEP AT A TIME

A good way to understand this diagram is to think of a purchasing system.

To initiate a transaction, an employee might access the system directly, through an Intranet Web site or via Lotus' Notes. Or an inventory control system, for example, might detect a reorder point, calculate an order quantity and pass on a requisition without human intervention.

At that point, the purchasing system must determine whether the item is established in the system; identify potential vendors; get availability and pricing; figure out which vendor to place the order with; place the order; pay for the item or confirm credit; and verify receipt.

The system's rules may call for human intervention, but in the next five to 10 years, transactions will increasingly become automated.

If potential vendors must be identified, the system may either launch a Web browser for human use or delegate intelligent software agents to search the Web. Tools such as Sun's Java can provide an interface between the vendors and the purchasing system.

Once vendors are identified, the system (or person) places the order. Payment may transpire through credit cards, digital cash transaction (DigitalCash, Ecash, etc.), third-party payment services (such as First Virtual) or combination of credit combined with traditional billing and payment. Naturally, authentication and encryption technologies are used.

In the near term, many vendors may be contacted by traditional value-added network-based EDI, E-mail or fax. In the longer term, intelligent agents launched by rules-based systems will exchange most of the information over the Internet.

As this happens, EDI and E-mail response times will be reduced to minutes or even seconds. Vendors that cannot respond quickly and accurately will be unable to compete.

Today, many organizations are successfully "taking it" by getting employees to respond rapidly to EDI and E-mail requests for proposals and purchase orders. But as required response times drop to minutes, then seconds, only rules-based systems will be able to handle transaction volume quickly and accurately enough to meet expectations. Employees will deal with occasional exceptions and manage the effectiveness and improvement of the overall business process.

Applications

The FC Broker

Communications Interface

Functions:

Functions:

VAN Interface

Fax Interface

E-Fax

Internet
Interface

Mailbox

Agent
Interface

Agent

External Network

Trading Partner

ONE STEP AT A TIME

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FEATURE STORY



UNCOMMON COMMERCE

18 • COMPTON WORLD TELEPHONE COMMERCIAL JOURNAL April 26, 1996

ILLUSTRATIONS BY LARRY GOODE

READY OR NOT, COMPANIES ARE GETTING WEB'D FOR COMMERCE. BUT GLITCHES REMAIN — NAMELY, PAYMENT, SECURITY AND INTEGRATION.

It's in the newspapers. It's on the radio. It's probably even cropped up at your latest social gathering. It's the Internet and Internet-based electronic commerce.

Proponents of the World Wide Web and the Internet preach that this technology phenomenon can and will cure the world's ills, from trade barriers to civil war. Detractors, on the other hand, say the Internet is the CB radio of the '90s. Indeed, for all the money being poured into Web-based commerce systems (an International Data Corp. study puts the range of site development between \$300,000 and \$1.5 million), few if any have claimed to actually be making money on the Web.

OK, let's just get ahead of ourselves. It's hard to argue that the Web will have zero impact on future business. It's gone too far for that — you can even order Girl Scout cookies over the Web.

Outside of true commerce, Internet technology solves too many problems to just go away. Network access, platform incompatibilities, client interfaces — these traditional IS headaches fade in the face of downloadable, platform-independent browsers and preexisting networks. "The Web will loosen up a backlog of projects previously deemed too expensive or complex," predicted Frank Gens, an analyst at IDC.

But is it ready for robust, secure electronic commerce? As our stories over the next few pages show, much depends on how you define it. If electronic commerce means increasing self-help customer service or starting a small business selling wine, come on down.

But if you're more rigorous in your definition — say, establishing one-to-one

consumer marketing strategies or building a secure network for business transactions — you'd better lower your expectations.

Here's the reality: While it doesn't take rocket science to build Web servers, home pages and firewalls, companies are still struggling to glue those elements together into session-based, performance-friendly, secure systems.



The top bottleneck is payment, said Marty Tenenbaum, founder of CommerceNet, a consortium that promotes Web commerce. "There's over 100,000 commercial sites, but the highest estimate of dollar commerce is \$20 million a year. So there's not a lot of commerce going on. What's stopping it is the ability to get paid."

Consider these additional issues: **PAGE 20. THE CONTENTIOUS ISSUE OF BANDWIDTH.** Internet pioneers claim its infrastructure is sufficient for now. Others contend that a new highway must be built. Meanwhile, most of the world still operates on 14.4K modems — hardly the backbone for meaningful trade.

PAGE 24. WEB/DATABASE INTEGRATION. Less talked about but equally daunting is the money being spent on custom

code, mainly in the interest of establishing some level of interactivity.

PAGE 26. SECURITY. The biggest nut to crack is security — both perception and reality. Vendors would have you believe encryption and authentication are here; implementers say it's possible to build impenetrable networks, but only if you've got the skills and know-how.

PAGE 32. ORGANIZATIONAL ADJUSTMENTS. As important as it is to learn and implement new technology, firms are also just starting to adjust organizational structures to meet the demands of electronic commerce.

But take note: Companies are working hard to solve these deficiencies. Small companies such as Virtual Vineyards are upgrading their Web/database integration to provide faster, more satisfying on-line shopping. Business-to-business electronic catalog suppliers are building downloadable browsers to make searches more meaningful. Automotive companies are banding together to build their own Internet-within-the-Internet to lessen the cost of EDI.

Meanwhile, a new market is being built around Sun Microsystems, Inc.'s Java, a language that holds promise for more interactive electronic commerce systems. And systems and database vendors are cutting the costs of custom coding by building in turnkey capability.

So will true electronic commerce become a reality? If we know, we'll be millionaires. What's undeniable is that companies are spending big bucks to make Internet-based commerce work to their advantage. Will money be wasted? Undoubtedly. But smart companies will balance the importance of getting on the Web quickly with the need to target efforts to their competitive advantage. □

— MARY BRANDOL

It's the **BANDWIDTH, STUPID...** **OR IS IT?**



SURE, WEB ACCESS IS SLOW.

BUT BEFORE YOU CRY 'BANDWIDTH,'

CONSIDER THESE OTHER MORE

IMPORTANT INFRASTRUCTURE ISSUES.

The U.S. business press has wasted no time going from barely recognizing what the Internet is to bellyaching about how its insufficient infrastructure prevents us from really profiting from the doggone thing.

There are, to be sure, reasons for grumbling about the none-too-speedy Internet. But what, if any, are the real-world implications for business? How important is it that the underlying technology is decades old? Does it matter that electronic commerce was the last thing on the minds of the Internet's designers and pioneers?

While a sort of freak accident, some say last fall's Internet brownout is a good answer to such questions. September's three-hour service interruption was caused by a user in Japan who attempted to broadcast a message to the

entire Internet community. It clogged routers along MCI Communications Corp.'s portion of the Internet backbone and caused particular trouble for users seeking to access popular Northern California-based Web sites.

And it doesn't take a brownout to frustrate even the most patient Web surfer. Some companies actually forbid Internet access during infamously slow peak usage hours just to keep their networks and modem lines open.

Of course, Web performance isn't always the fault of the Internet itself. It's only as strong as your weakest link, whether it be a slow Web server; a 14.4K bit/sec. modem; a 10M-byte Ethernet backbone or a 56K-bps access line.

But by some accounts, the Internet is poised to fall victim to its own success. As the number of users multiplies, the number of paths leading to the Internet renders communications

BY JEREMY SCHLOSBERG

among its patchwork of component networks increasingly less straightforward. Meanwhile, the aging backbones — both the switches and the mix of T1 and T3 lines — prove a less and less capable conduit for the traffic crushing through them, which could reach 10T bytes on a good day, according to Eric Schmidt, chief technology officer at Sun Microsystems, Inc.

As far as Einar Stefferud is concerned, the Internet is running at the bare edges of acceptable performance. Stefferud is founder of First Virtual Holdings, a midsize organization for World Wide Web-based commerce. He experiences and hears about enough isolated outages, from local independent software provider "meltdowns" to random connectivity lapses, to be convinced not only of the Internet's existing problems but also of its future ones. "Performance is threatening to get worse," he asserted.

That will be especially true, some experts say, when U.S. business clambers aboard in search of full-fledged electronic commerce. "The Internet is not geared toward nor does it have the infrastructure to support broad, interactive commerce applications," said Christine Heckart, director of broadband consulting at TeleChoice, a Verona, N.J.-based consulting firm.

To Heckart, the issues go beyond routers, switches and line speeds. She

pointed instead to the lack of a sophisticated billing infrastructure that electronic commerce of the future will require, such as usage-based charging and the ability to send payments to more than one place (due to royalty considerations, for instance).

But for the general public, it all boils down to one thing: the B-word. If you want to sound smart when it comes to infrastructure problems on the Internet, just say "bandwidth."

Too bad the bandwidth issue, from a business perspective, is a bit of a crock. Certainly there are performance problems, and some of them would be improved with faster lines and switches.

In fact, the Internet's insiders are working to improve bandwidth: the supernet's 13 core routing links are being upgraded from 45M bytes to 155M bytes, according to Schmidt. And a few of the Internet service providers, including Netcom On-Line Communication Services, Inc., UUNET Technologies, Inc. and Performance Systems International Network, have or plan to incorporate high-speed switching systems from Cascade Communications Corp.

The National Science Foundation is offering grants to scientists and engineers to speed the flow of scientific and technical data over the 'net. And Inter-

OF ALL INTERNET USERS
ARE ACCESSING IT VIA
1.1-40 BIT/SEC MODEMS

net service providers are expected to offer higher-speed connections that fall between T1 and T3 speeds (1.5M and 45M bit/sec., respectively). So far, UUNET and MCI have introduced 3M to 16M bit/sec. connections.

But the people most genuinely involved with the realities of doing business on the Internet today, rather than those offering a vision of what it's going to be like someday, are the ones least concerned with bandwidth issues.

"The backbone infrastructure is adequate," said Eric Bataller, technical liaison at CommerceNet, a trade association promoting use of the Internet for business. For business use in particular, he said, the issue is not so much that there aren't enough "lanes" on the highway; much more crucial is how the traffic is getting coordinated. These are "hard-core routing issues," he said, that deal with the logistics of how data makes its way around the Internet.

"As far as the underlying network goes, there's no problem," affirmed Leonard Kleinrock, professor of computer science at the University of California at Los Angeles, adding that the Internet will get upgraded on an as-needed basis. And he should know, being one of the principal architects of the Internet, when it was born as the

Please turn to next page

those who have thought about what conducting business on the Internet really means (which for now has a lot more to do with information distribution than with transactions) are far less concerned with theoretical pipe whistlers and far more attuned to the gritty details of network's more immediate technological shortcomings. The most

significant infrastructure issues, they said, stem not from inadequate individual components but from the inadequate distributed whole the components create.

If the Internet breaks today, good luck figuring out where the trouble is, not to mention whose responsibility it is, said TeleChoice's Christine Heckart. For businesses to rely on it, there has to be

enough network redundancy that if it breaks the system doesn't come crashing down as well. Another concern that lacks the veneer of the bandwidth panic is a standard. While protocols are standardized, the data is not. There are no standards for conducting the sort of basic commerce everyone's talking about, said Sam Rowan, manager of the AI Center at

Stanford University. The current standard, developed by the Internet Engineering Task Force, is a patchwork of standards, which is problematic on a global scale. What protocols have to support one another as well. It seems logical, for instance, that a user shouldn't have to type in his name and

password to connect to a server each time he accesses it. But one on which business is conducting business, security should be able to protect this information from the user's computer. I think commercial use is going to roll out slower than people anticipate largely because of these standards issues," said Leonard Kleinrock, professor of computer science at UCLA.

FEATURE STORY BANDWIDTH

Continued from page 21

Arpanet in 1969. He conceded, however, that "it will get overloaded when we get much more multimedia."

Multimedia may well be the fork in the road, down the road. Nonetheless, when Dar Busa, vice president of marketing at Dallas-based Sterling Software, Inc., hears about the imminent takeover of cutting-edge, bandwidth-hungry, Internet-related products and technologies, he doesn't buy it. "That's the stock market talking — not the bottom line

parallel 'Internet,' specifically built and geared toward business communications and electronic commerce," she said. "Even though the Internet is considered this new, sexy thing, what it really is is your grandma. You're not going to take her to the prom."

Sounds like quite an undertaking, but Heckart

THE INTERNET "will get overloaded when we get much more multimedia."

LEONARD KLEINROCK, PROFESSOR, COMPUTER SCIENCE, UCLA,
PICTURED NEXT TO THE SWITCH THAT
LAUNCHED THE INTERNET

talking," he said.

The better question is who has any current, feasible, profitable business reason for wanting to put multimedia on the Internet. No doubt there are consumer-oriented applications that will benefit. But getting antsy about the lack of megabandwidth on the Internet in 1996 would be like itching in 1995 to start selling propeller grease to automobile owners in anticipation of the just-around-the-corner day when cars would fly.

Take the findings from a recent International Data Corp. report, which revealed that 63.5% of all Internet users are accessing it via lowly 14.4K bit/sec. modems, fewer than 15% use 28.8K bit/sec. modems, and a mere 1.4% use Integrated Services Digital Network lines.

But just for a minute, let's pretend we're in a future that fulfills the rosiest predictions of today's electronic commerce proponents. Does the technological backbone look anything like the Internet?

TekChoi's Heckart said it doesn't. "What we need is an industrial-strength,

asserted that it is doable in a couple of years. Who could pull this off? Either a high-end Internet access provider or a partnership such as AT&T Corp./BBN Planet or MCI/Microsoft Corp., she said.

Others disagree with the need for such a monumental rebuilding. First Virtual Holdings' Stefferud, for one, offers two solutions. The first would be to build special segments of the Internet with higher-performance parameters to meet, for example, a specific industry's need for reliability. The automobile industry, in fact, is in the process of doing this. Auto manufacturers are developing a plan to certify and monitor independent software providers for compliance with a set of performance, reliability and security metrics.

The basic idea, he said, is to lease lines between the critical sites and to restrict IP packet routing to approved IP addresses. In this way, "the auto industry can obtain controlled levels of service within their restricted traffic envelope, while still enjoying access to the rest of the 'net,'" Stefferud said.

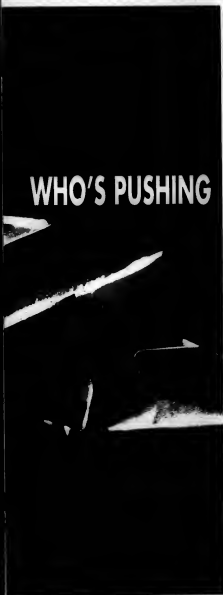
The second solution, he said, is to layer a well-designed protocol on top of the existing network to generate the desired level of dependability. Take, for instance, how his own company has designed its payment system to revert to mail in case of TCP/IP failures. The transactions will then accumulate in various mail queues around the Internet, ready to drain into the commerce server when the system is back in order.

Any company or industry can make any critical segment of the Internet as reliable as it wants, Stefferud said.

Time will tell, but we are well advised in the meantime to take all visionary schemes with a large grain of salt.

"I think the death of the Internet has been greatly exaggerated," said Lyle Ginsburg, manager of Arthur Andersen & Co.'s network technologies program. "You have to understand who's saying these things and what their vested interests are."

Schlosberg is a freelance writer based in Cincinnati.



WHO'S PUSHING

JUST ASK US.

With gigabytes of information collected daily from customers using virtually every kind of technology, International Billing Systems (IBS) had a serious electronic commerce challenge to reconcile. IBS, who provides billing services for communication companies nationwide and is the country's largest producer of first-class mail, needed an electronic commerce partner who could

THE ENVELOPE OF
**INTER-PLATFORM
COMMUNICATIONS?**

deliver flexibility and accuracy under any conditions. Sterling Commerce, with its strong reputation and proven CONNECT products, fit the bill perfectly.

Now, IBS' entire billing process, from receiving customer data to printing and mailing the bills, is fully automated. Customers communicate easily with IBS, regardless of their own application, operating system or network needs. And the company itself has become more efficient, posing significant savings in time and money. For IBS and Sterling Commerce, those results make quite a statement.



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UNLOCKING the Database DOOR



GETTING BEYOND BROCHUREWARE
MEANS MAKING THE
WEB-TO-LEGACY LINK AND
BYPASSING HTTP LIMITATIONS

Virtual Vineyards could see the problem coming from the get go. A year ago, when the Los Altos, Calif.-based on-line wine and food retailer started its Web site, it knew its customers would eventually have difficulty accessing the homegrown, Unix-based order processing system that enables transactions. And for a company that is nothing if not on-line, that would spell big trouble.

"We don't have a storefront, so we don't want people to come into our [Web] site and not be able to order," said Ruth Colombo, vice president of engineering. The problem, she said, was that shoppers had to reconnect to the database each time they moved to a different page containing wine lists, serving suggestions and food recipes.

Virtual Vineyards (www.virtuwin.com) is just one of the many Web pioneers running into a simple but com-

pelling problem with electronic commerce systems that depend on corporate databases front-ended by Web servers: The Hypertext Transfer Protocol (HTTP) that supports Web-to-legacy links treats this access as a onetime-only affair rather than as a session that could involve many requests.

Indeed, perhaps one of the biggest frustrations for Web users today, second only to bandwidth woes, is what Web watchers call the "stateless," or "sessionless," nature of HTTP. This limits applications in a number of ways, one of which involves users waiting several seconds each time they click on a new Web page because each new page must make a new call to the corporate database.

"Every time a guy presses a button on a Web form, you have to go through the whole process of connectivity, and it's relatively time-consuming," said John Sauter, associate director at the Industrial Technology Institute's Center for

BY MARK HALPER

Electronic Commerce, an Ann Arbor, Mich., nonprofit consulting group. "It's only milliseconds, but milliseconds become seconds."

Or put another way, "You'd like to think that once you hit the home page and have gone three or four pages into it that you'd have a higher priority in terms of responsiveness than someone who just hit the Web page," said Eric Brown, senior analyst at Cambridge, Mass.-based Forrester Research, Inc. "But the Web has no way of knowing who is in the middle of doing something vs. who just walked in the door."

Just the same, companies ranging from start-up Virtual Vineyards to travel reservation giant Sabre Group are finding ways to build session-based systems to run applications such as order processing, inventory checking and ticket purchasing. After all, "most of the information that's critical to business today is in legacy systems, so Web sites offer a logical extension to interact with legacy data," said Tannay Lowe, assistant MIS director at Burlington Coat Factory (www.cout.com).

AMR Corp.'s Sabre Group travel reservation subsidiary (www.sabre.com/sabre_grip/sabre_grip.htm) well understands the real-world implications of sessionless sites. Sabre Decision Technologies, a unit of the Sabre Group in Fort Worth, Texas, is in the middle of an ambitious plan to tie the company's Web site into the IBM mainframes that support the massive, 30-year-old Sabre system. The planned system, dubbed "Travelocity," is one of the largest Web-to-legacy efforts under way and went live in early March after only nine months of development.

Web surfers can access the legacy Sabre system to book flights or view descriptions of travel destinations. But because Sabre is a "state-based," real-time system that delivers up-to-the-minute data throughout a session, "we've had to fool the Web site into thinking it's a state-based system," said Dolly Wagner-Williams, a principal at Sabre Decision.

Otherwise, "if I'm a user and I call up flights, and then I want to book one, the computer would have no idea who I am because the 'set' can only handle one

command at a time," said Doug Gray, a senior principal at Sabre Decision.

Plus, the user could end up booking a seat that has since become unavailable. That's because a further restriction on Web-to-legacy applications is the static nature of the Web, which makes it difficult to provide timely data or update information. "Today's Web is a dead Web," Forrester's Brown said.

So what's the trick? "Middleware," Gray said. A Silicon Graphics, Inc. (SGI) server acting as a middleware server and residing between the end user and the legacy system houses custom-built, object-oriented "screen builders" that create a real-time environment for the Web site. "We were hoping to employ third parties, but we haven't seen anything off the shelf," he noted.

WORKING OUT THE KINKS

Elsewhere, Web masters and electronic commerce staffers are taking advantage of new tools, databases, Web server software and homegrown programs to remove kinks in the Web page-to-legacy link.

Many of the development tools are coming from third-party vendors such as Spider Technologies, Inc., Bluestone, Inc. and Edity Corp. The database vendors have also been adding features, such as Oracle Corp.'s WebSystem suite and Sybase, Inc.'s web.sql. Informix Corp.'s acquisition of Oakland, Calif.-based Ilustra Information Technologies, Inc. provides Informix with tools for managing video, audio, text and graphics as well as traditional alphanumeric relational data.

Some of these solutions solve the Web's statelessness by tampering with the interface between a database application and the Web. Called the Common Gateway Interface (CGI), it is the Web equivalent of an application programming interface (API).

"CGI was a good mechanism for running simple programs on the Web server, like credit-card checks and simple searches," said Zack Rinal, chief executive officer at Palo Alto, Calif.-based Spider. Spider 1.5 circumvents CGI altogether when the Web server uses Netscape Communications Corp. soft-

ware and reduces the CGI role on other Web server brands, Rinal claimed.

Vendors are also working to get around another Web limitation: There's no built-in way to track who's calling into the site and what the person does there. If the system could remember more, pages could be ready with customized information. For example, if a customer buys a color TV, the system could offer a VCR the next time the customer dials in.

With WebSystem, Oracle claims to closely watch shoppers. If, for instance, the customer is perusing a music site and drills down to the jazz section, the Web page can be tailored with jazz offers the next time the customer surfs in. Next Software, Inc. has redeployed its object development technology to help Web developers build customizable database links into their Web sites. And Connect, Inc. offers a high-end system that enables one-to-one marketing and customizable pages.

NEW RELEASED INFORMATION ABOUT CUSTOMER SERVICE
AND WEB DEVELOPMENT
SOLUTIONS
ON CUSTOMER DEVELOPMENT AND DESIGN

The travel industry is home to other Web-to-legacy projects. The Hotel Industry Switch Co. (Thisco), for instance, added a real-time booking capability to its TravelWeb system (www.travelweb.com/thisco/global/thisco.html) in December. Until then, TravelWeb was a marketing-only vehicle that delivered text and video information from a Sun Microsystems, Inc. SPARCserver 20 running Netscape Web server software.

To add the booking capability, Thisco had to tie its Web site into a four-processor Pyramid Technology Corp. Nile server sitting in Phoenix. That big Unix box acts as what Thisco calls an "ultra-switch." It routes hotel booking requests among 8,000 hotels and thousands of travel agents tied into large reservation systems such as Sabre.

How did Thisco make the connection from the Web server to the Pyramid box? Like Sabre, it constructed a single
Please turn to next page

FEATURE STORY DATABASE INTEGRATION

Continued from page 25

processor Intel Corp. Pentium server running Unix and custom-built middleware that guarantees the real-time state of the data traded between agents and hotels, said Kathy Gutierrez, a product development director at Thisco.

About three quarters of the hotels in the Thisco orbit are hooked up in real time to Thisco's Pyramid switch. Anyone with Web access can use the system to make reservations.

At Virtual Vineyards, youthfulness abetted the effort to improve the Web-to-legacy connection. The 2-year-old firm's operations were small enough that it could replace its homegrown Unix database with a \$15,000 Sybase database.

Virtual Vineyards chose Sybase because of the web.sql feature introduced in December. Web.sql includes Netscape APIs that invoke an ongoing "session" in the Web-to-database link and ensure that data loaded into a Web page is up to date, according to a Sybase spokesman. "Web.sql helps us maintain open connections," Colombo noted.

As of press time, Virtual Vineyards had not yet switched over to a production version of the Sybase system, which it was loading onto an SGI Indy workstation acting as the company's Web and database server.

To complete the link, Colombo had to rewrite existing code so that the Web site would tie into the new Sybase database. That rewrite — in the Perl language — is complete and took only two weeks, she claimed.

But a bigger rewrite may be in store as the firm evaluates other languages such as Sun's Java that have evolved since Virtual Vineyards first went online. Colombo said Java's popularity portends a greater selection of applications that Virtual Vineyards could tap.

She is expecting plenty of activity from all the database vendors working to facilitate Web site interaction. "A lot of the new ground seems to be in how we're accessing the databases," she said. And that clearly includes the Web. ■

Holper is a freelance writer based in San Francisco.

RETAILER PICKS PATTERN FOR WEB LINK

or Burlington Coat Factory, finding the right Web-to-legacy link has some immediate bearing on the company's internal work processes.

And that, in turn, could eventually lead to full-fledged Web-based electronic commerce with Burlington's customers and suppliers.

The Burlington, N.J.-based clothes-hut-two-oriental-operations already in place. The human resources department disseminates answers to frequently asked questions and posts its pay-raise manual on-line. And the company has published a Web version of a portion of its electronic catalog, which is available to Web surfers both inside and outside the company. It is not yet set up for electronic purchasing.

IS director Tansy Lowe said she foresees an explosion of internal activity on the Web, but Burlington will first have to decide as a

blueprint for making the link to the new Sequent Computer Systems Inc. Unix boxes that make up the company's legacy system in a synchronized multiprocessing scheme.

Key to that link will be any development tool that cuts down on the amount of coding for each separate Web page. Lowe said to that end, she lauded Oracle's PowerBrowser part of Oracle's Web System suite — which the company said to be its catalog and human resources information to its Web sites.

According to Lowe, PowerBrowser actually includes Web page development tools that keep the Oracle browser in mind. Developers can construct a page so it receives real-time information and displays only the data germane to that page and suitable to the access privileges of each particular

for Web surfer.

That feature is key to any IS department developing database links to Web sites. People aren't going to hunt irrelevant critical applications on the Web if they have to wade the irrelevant critical data for each page, Lowe said.

Lowe's point is a reminder that raw data is no more impressive, but it's useless unless it is presented in the right manner to the right person at the right time. In other words, as Forrester Research's same analyst Eric Brown noted, having data is just part of the battle in statistically displaying a Web site. Easy access to and useful applications for the data really deliver a strategic edge.

"You want to use the Internet as an extension to your legacy systems," Brown said. "You have to keep in mind that you're not just displaying data — you're exploiting applications."



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That depends on who you talk to. For Northern Telecom and its trading partners, the answer is "two years ago." What started out as a single customer request for EDI in the mid-1980s evolved into a global electronic commerce system for Nortel, a worldwide supplier of communications products. The company that helped get them there is Sterling Commerce.

Using Sterling's many resources, Nortel has made electronic commerce an integral part of the entire company, from purchasing and accounts payable to logistics and traffic management to customer communications and tax filing. The Sterling Commerce connection has helped Nortel reduce cost per order, improve customer service, increase accuracy and better manage its global supply chain. With results like that, the message is clear — in the world of electronic commerce, Nortel has definitely arrived.

FEAR

AND LOATHING

on the World Wide Web



THERE ARE NO GUARANTEES ON
THE 'NET — EXCEPT THE ONES YOU
BUILD YOURSELF USING ENCRYPTION
AND AUTHENTICATION STANDARDS

Ah, security. Just when you thought you had the hang of it, someone got the bright idea of conducting commerce over the Internet. Life as you know it will never be the same.

But not for the obvious reasons. Not because of the hackers poised to pounce on your vulnerable transmissions. That kind of threat has been here for years.

No, what's different is this: Instead of concentrating on keeping strangers out, today's security professionals must learn to invite them in — to bid on contracts, view product literature, even conduct financial transactions. As a result, most of your assumptions, skills and decisions regarding security must be tossed into the dustbin of history.

"Never before have companies had the prospect of 30 million tire kickers invited into their core application com-

plex," said Blaine Erwin, senior analyst at Forrester Research, Inc.'s Network Strategy Service. "And it makes security a different kind of job because IS now has to think seriously about the information it has, how much it will make accessible and to whom."

These are tough issues, especially in an environment whose underlying technology allows people to pretend to be someone else, intercept data and passwords and change that information before it reaches its destination. Hardly the attributes to promote commerce. And yet the Internet is increasingly eyed as a communications medium for doing business among suppliers, vendors, consumers and merchants.

Sound like a pipe dream? "Currently, I can't think of anything more dangerous than passing valuable commercial information over the Internet," said Jon Littman, author of *The Fugitive Game*

BY ROCHELLE GARNER

(Little, Brown and Co., 1996), a book that details the capture of famed hacker Kevin Mitnick. "I know a merely average hacker who cracked a banking money-transfer system and transferred thousands of dollars for himself. And there are plenty of hackers out there who are more talented than he is."

Undoubtedly true. And yet, many experts say, companies can safely transmit critical business information over the world's interlocking public networks, provided they take the right approach. The first step? Adopt the proper perspective. "Security is important, but not as important as companies think," Erwin said. "The right question is, why hold the Internet to a higher standard?"

His point is this: Commercial transactions in the real world have higher incidents of fraud than most people realize. According to Erwin, the cell phone industry suffers \$20 in fraud for every \$1,000 spent; credit-card companies get taken for \$140 per \$1,000. "There's the expectation that fraud over the Internet can be zero, and that's wrong," he said.

WHOM DO YOU TRUST?

It's a quandary time. But the fact is, both views are correct, as long as organizations remember that on the 'net, there are no built-in guarantees that information actually came from the alleged sender or that it wasn't altered along the way. The issue: finding Internet equivalents to the passports, driver's licenses and official signatures that exist in the three-dimensional world.

"This is where the IT organization of the future comes in," said Joe Carter, managing partner of Andersen Consulting's Center for Strategic Technology in Palo Alto, Calif. "IS has to have an infrastructure that allows them to authenticate and authorize users from outside their organization. They have to have a new 'knowledge manager' who understands the value of their knowledge assets and decides what should and should not be made available. And they have to change their thinking, from barricading information to opening it up."

We have the technology. "If you are transmitting something that has val-

ue, you have to use cryptography," said Larry Landweber, professor of computer science at the University of Wisconsin in Madison and president of the Washington-based Internet Society. Cryptography, most agree, is essential for authenticating users, protecting confidentiality and ensuring integrity. From it comes encryption, decryption, digital signatures and digital identifications.

First, a brief primer: Today, most cryptographic systems use a public key scheme popularized by RSA Data Security, Inc. in Redwood City, Calif. Keys range from 40 bits in length on up.

The beauty of a public key system is logistics. They can literally be broadcast, with companies in effect saying, "If you want to contact us, use this key." Each public key has a corresponding private key known only to its owner.

Until recently, though, even public key encryption proved burdensome, requiring additional software and forcing people to go out of their way to use it. Last year, with the formation of Terisa Systems, that began to change. Terisa licenses RSA encryption to any company that wants to produce a secure Web server. The result? "Security is becoming productized," Erwin said. "And that makes it ... just a matter of putting the right products together."

NOT SO FAST

If only it were so easy. "Security built-in is contradictory to transparent, at least in terms of administration," said Ken Shaurette, information security specialist at American Family Mutual Insurance Co. in Madison, Wis. "There's no standardization in these products, so as a security administrator I could have 10, 15, 20 different systems to learn."

Those concerns have American Family keeping the Internet at arm's length, using it only to advertise services. "There's nothing to say that, as security improves, we won't take advantage of the Internet for electronic commerce,"

Shaurette said. "But right now, we reserve that for our private lines."

He's right to be cautious, considering the still-ambiguous state of Internet security standards. Start with the encryption used in Netscape Communications Corp.'s Netscape, the most popular commercial Web browser. Within the U.S., Netscape's encryption algorithm is 128 bits long. Outside U.S. boundaries, thanks to federal government export controls, the algorithm is a mere 40 bits. That's the cryptographic equivalent of the 98-pound weakling. Now imagine keeping the two versions straight.

Then there's the kind of security that browsers and servers use. Netscape uses the secure sockets layer (SSL), which provides security at the connection level. SSL's competitor is Secure Hypertext Transport Protocol (SHTTP) from Terisa. It provides message-level security. Neither is considered more secure than the other, although SSL is becoming more of a de facto standard. Still, for either scheme to work, it must be on both the Web server and browser software.

Confused? There's more, because also in the mix of proposed security standards is a raft of standards aimed at different functions. These include nonrepudiation protocols, payment protocols and electronic-mail protocols.

Consider nonrepudiation, which guarantees a message's sender and its integrity. It is handled in part by SHTTP but not at all by Netscape's SSL.

Then there are the nearly 20 different payment protocols now under discussion. That's confusing enough. But throw in different payment instruments, such as those from CyberCash, Inc. and DigiCash, and it's clear that payment remains a nebulous issue.

This confusing array of security standards poses a difficult scenario: Every organization that needs to exchange

Please turn to next page

FEATURE STORY SECURITY

Continued from page 29

sensitive information would have to use identical security standards.

What's more, to truly understand how to secure Internet transmissions, you have to know the technology's vulnerabilities. That's why John Rhodes relies on E-mail to secure payment orders between Lawrence Livermore National Laboratory in Livermore, Calif., and Bank of America in San Francisco. The two are running a pilot payment system, sponsored by CommerceNet.

Several times a day, Lawrence Livermore automatically downloads accounts payable messages to its electronic data interchange (EDI) system, converts the message to the standard X12 format, encrypts it, signs the message with the lab's private key, puts the whole thing in an E-mail envelope and sends it to the bank. "E-mail security is among the best available for the Internet," said Rhodes, electronic commerce/EDI projects engineer at the lab.

Of course, it helps that Rhodes and his colleagues truly understand the

nitty-gritty of E-mail transmissions. And that's critical. "It doesn't take too big a mistake to leave yourself wide open," he said.

HIGHER AUTHORITY

Today, the full promise of global electronic commerce remains unrealized because there's no universal way to verify identity. That could begin to change in about a year, with what's being called a public key infrastructure. Its purpose is to issue the electronic equivalent of passports in the form of public keys, digital signatures and other cryptographic identities that prove we are who we say we are. RSA spin-off VeriSign, Inc. in Belmont, Calif., is among the first to offer this service, with its digital identifications — the key component for secure Web servers.

But for interoperable security to be truly ubiquitous, some say, electronic commerce will also need the presence of a large, pervasive authority. "I'll have a public key that was issued by someone who isn't reliable, what good is the

key?" said Jerry L. Johnson, senior policy analyst for the state of Texas Department of Information Resources in Austin. So who will that higher authority be? "Right now, the U.S. Postal Service seems the most likely candidate in this country," he said.

Perhaps surprisingly, most experts predict that the public key infrastructure will be in place by the end of next year. When it is, companies face at least the prospect of ubiquitous and global electronic commerce over the 'net. For now, companies that are eyeing the Internet must create small, self-contained communities of trusted partners.

In the meantime, nearly everyone involved in furthering business over the 'net has the same advice: Start small, get acquainted with the technology, and gradually build up a system of electronic commerce. But by all means, start. ■

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GETTING SECURITY SQUARED AWAY

he just doesn't scare Ken Urrut. Hart just took at his hardware for Alaska Airlines in Seattle. A Web site that takes credit card numbers and sells airline tickets without fear of being hacked.

You don't have to be as fearful as you think or have a team of security experts to protect credit card transactions, said Urrut, a research scientist at the airline in charge of creating the first Web-based ticketing system in this country.

"You just have to be careful about the hardware and software you choose. Case in point: "We

made the choice to go with the Apple Internet Series, which has been hanging up to 100,000 hits a day without a problem," he said. Why the Macintosh? Because it ran Linux. Urrut said the Mac OS has a very specific and limited means of Internet access, without all the backdoors you find in Unix.

Important for Alaska's system are the components and policies that make transactions secure. Because the No. 3 Web browser is Netscape, for example, Alaska uses the SSL security protocols in its server software. So users who access the Web

page through Microsoft's Internet Explorer don't have to worry about a security hole in Netscape.

The key to Alaska's form is its digital ID from VeriSign Inc. The digital ID is a secure software that's won't run without a digital ID. Urrut said it's the expense of making it all work.

The result: "We control the credit card transactions a lot tighter than does someone handling paper," said Bob Bender, staff vice president of information and communication services at Alaska. "I think the Internet environment can be more secure than in the 3-D world."

Urrut said the airline's system is secure because it's built on a secure hardware and software foundation. "We've got a lot of security built into the system," he said. "We've got a lot of security built into the system."

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HOW CAN I GET THE GREATEST RETURN

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By working with Sterling Commerce, ABN-AMRO, one of the world's Top 20 banking companies, is making the most of its investment in electronic commerce. After a successful financial EDI pilot for its corporate cash management customers, the company decided to expand its electronic commerce program to include accounts payable applications. With Sterling Commerce as a partner, the bank streamlined its own accounts payable department by enabling the group to receive, format and pay the company's incoming invoices electronically.

ABN-AMRO's reengineering project has paid off in increased efficiency and accuracy. With Sterling Commerce's help, the institution is now planning to offer its accounts payable services to other corporate customers. As ABN-AMRO discovered, when it comes to contributing to the bottom line, Sterling Commerce is the company you can bank on.



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THE REAL WORK HAS JUST BEGUN.

When Schoolkids Records and Tapes, Inc., an Ann Arbor, Mich.-based record store and recording label, established its Web page in 1994, President Steve

Bergman made an effort to keep things modest. "We had no interest in replacing our retail store with an electronic company," he said. So while visitors can browse through musical releases, download sound bytes of new recordings or "chat" with knowledgeable employees, if they want to buy a CD or tape, they are urged to call an 800 number.

But modest? Bergman soon found out otherwise. "As it turned out, we were way too ambitious," he admitted. The biggest challenge, he said: site maintenance. And he isn't talking technical issues.

First there was the job of generating enough high-quality content. Theo, Bergman had to make sure electronic questions got answered in a timely manner. Even after hiring a new employee to manage the site, Bergman re-

alized his staff of 30 would have to become professional jugglers to balance Schoolkids' \$3 million business with the new activities the Web generated. "The more we did, the more the site seemed to require," he said.

So you're thinking about leaping into the electronic marketplace? While technical challenges abound, your biggest headaches are likely to be organizational: how to define what new jobs are required (see box page 33); how to hire or retrain employees to fill those jobs; and how to restructure your company and redefine departmental roles and relationships.

Whether you're building a Web site or planning a business-to-business purchasing system, "expect to see the effect of an on-line application ripple through your entire organization," said Jim Proctor, president of The Inteq Group, a Los Angeles-based consulting firm that specializes in electronic commerce.

Proctor recently completed an on-line order processing system for a client. The effect on the firm was "dramatic,"

BY ALICE LAPLANTE

he said. Field sales representatives, freed from manual order-taking, spent more time on higher-level marketing and "relationship management," low-level order-entry and credit-approval clerks were no longer necessary; and fewer telephone reps were needed.

In general, an on-line system will "require higher-level people, and less of them," Proctor said.

Further confusing the matter is the uncertainty of Web-based electronic commerce. According to International Data Corp., 20% of Fortune 500 companies with Web sites will have stabilized or closed them by year's end. The reason: Users will be "underwhelmed" by content and capabilities. That makes it difficult to predict staffing requirements, especially because most sites are informational and unlikely to generate significant revenue in the near future.

And so some firms are reticent to rock the boat. Silicon Graphics, Inc. (SGI) in Mountain View, Calif., one of the first commercial entities to establish a Web presence, is holding off on selling its products on-line. Such a venture would wreak chaos on SGI's worldwide network of 65 sales offices and 30-plus distributors. "When you have multiple channels of distribution, you need to be sensitive about competing with your partners," said Anita Schiller, director of electronic marketing.

Then there's the question of where, organizationally, your electronic commerce employees fit in.

After much discussion, the electronic marketing commerce services group at Hewlett-Packard Co. was situated in the worldwide marketing department. "Ultimately, we decided the site probably has to be owned by marketing because it involves the way the company interfaces with the customer," said Randall Whiting, whose background includes sales, marketing and software development.

On the other hand, it doesn't make sense for marketing to become a buffer between employees and customers.

"Larger companies, especially those with multiple divisions, have to make sure that customers can connect directly with the right person without getting mired in a lot of organizational layers.

After all, that's one of the chief advantages of doing business on-line," said Cathy Medich, executive director at CommerceNet, a Menlo

Park, Calif.-based consortium of Internet-based businesses.

Which leads to the issue of accountability. With this new way for customers and suppliers to interact with the organization, how do you make sure nothing falls between the cracks? "If a customer wants to place an order electronically, communicate through E-mail or get support on-line, that's great. But if they want the human touch, that has to be there as well," Whiting said.

To ensure the highest quality response to electronic customers, The Vanguard Group, Inc. established a dedicated group to handle the more than 500 queries a day it gets from various on-line connections. "We knew that electronic client services is quite different from telephone service. It requires a higher level of research ability as well as the skill to craft a well-written response," said Bob DiStefano, senior vice president of information technology at the Valley Forge, Pa. financial services firm.

And "because the Web will allow employees to work more directly with

customers, companies need to be aware that Web interactions will call for some somewhat different skills," said Glover Ferguson, di-

rector of research at the Center for Strategic Technology Research at Andersen Consulting in Chicago. Chief among these are writing skills. In addition to misspellings and grammatical mistakes, which give a poor impression, "you can't take back the things you 'say' on-line," he said.

Many of the skill sets for a successful electronic business are still being defined. A case in point: The first employee hired at Virtual Vineyards, a Los Angeles, Calif.-based Web site that sells wine, olive oil and other gourmet foods, was a wine guru. The second: an electronic marketing manager. What does that job entail? Robert Olson, president of Virtual Vineyards, admitted he's still trying to figure that out. "Our marketing manager is basically responsible for getting the customer into our electronic store — whatever that takes," Olson said. "It's a tough job because no one quite knows how to do it yet."

LaPlante is a freelance writer based in Woodside, Calif.

MOVE OVER, WEBMASTER

he follows, with all the other sites used to be grouped under the title of Webmaster. But as a Web site becomes more active, it needs more than one person to keep it going. Here are some new job titles appearing at firms with emerging Web businesses:

Provides the raw material that makes your site worth visiting.
Makes sure this material is new, sale current, unduplicated and polished correctly.

Attends the site.
Keeps content clean of spelling and grammatical errors and ensures consistency with corporate culture and image.

Ensures that the Web site is available 24/7.

Gets customers in the door of the site.
Establishes, but does not manage, setting up and testing with other sites to increase traffic.

Surfs the Web to check out competi-

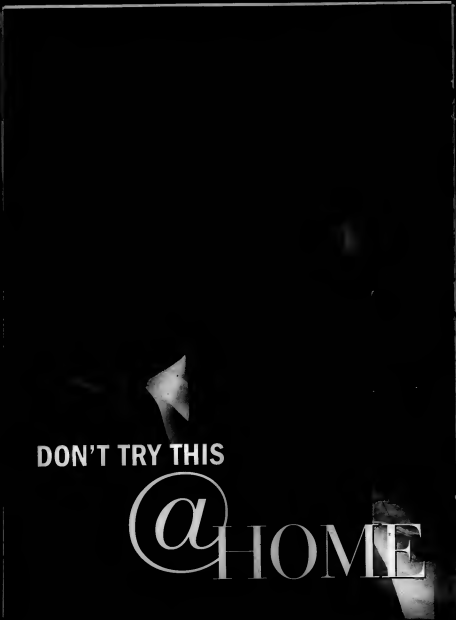
tion.

Keeps track of new ideas.

Writes user manuals that navigate through the site.
Answers user questions. Provides feedback to interface designers.

Ensures that all transactions with customers meet corporate standards.
Processes departmental accountability for returning e-mail, answering queries.

Knows the best hot thing about Web technology.



DON'T TRY THIS

@HOME

IF THE WORLD WIDE WEB represents the cutting edge of electronic commerce, EDI is its cornerstone. Developed by the trucking industry nearly 30 years ago, this very rigorous, complex and relatively expensive way of doing business electronically — such as exchanging quotes, purchase orders, invoices and shipping notices — has crept its way into most of the Fortune 1,000.

Still, the estimated 100,000 U.S. companies conducting electronic data interchange (EDI) represents just a small fraction of the 6 million businesses in existence today.

Can the Internet change those mathematics? With its promise of lower costs and easy accessibility, a lot of people, including EDI vendors, are starting to think so. For small and medium-size firms, formal EDI over value-added networks or private lines is just too expensive and complicated, the Internet seems to put EDI within reach.

And quickly. Within five years, most EDI will transact over the Internet, predicted Jack Shaw, president of Electronic Commerce Strategies, Inc. in Marietta, Ga.

Even stalwart EDI users are opening their imaginations. In a recent survey by Forrester Research, Inc. in Cambridge, Mass., 20 of 30 heavy EDI users said they are looking seriously at the Internet.

Take Texas Instruments, Inc. Its EDI system conducts 600 transactions a day. So why is the Internet even a twinkle in the company's transaction processing eye? Two words: cost and collaboration.

TI currently pays several hundred thousand dollars a year to more than 40 value-added network (VAN) providers that not only provide the connection and mailbox but also manage EDI messages to ensure they arrive safe and sound.

And while EDI is great for formal transactions, it does nothing for ad hoc

exchanges. If TI could add file transfers, videoconferencing and whiteboarding to its roster of supplier interactions, it could cement relationships and add significant savings in the supply chain, said Gene Phifer, senior information technology manager and Internet strategist.

Wouldn't it be great, he speculated, if the firm could use the same backbone for both collaborative activities and EDI?

EDI vendors are well aware of such speculation. That's why they're scurrying to set up new Internet businesses and offer products and services designed to make the Internet secure

THE INTERNET IS A WILD AND WOOLLY PLACE FOR EDI. NOT FOREVER, THOUGH — EVEN STALWART PLAYERS SEE THE 'NET IN THEIR FUTURE.

(see story page 36). Eventually, the EDI VANs are expected to unbundle their translation, mailbox and other management services from their network connectivity charges and make them available on the Internet, said Marty Tenenbaum, founder of CommerceNet, a consortium that promotes Internet commerce.

"After years of working with fairly rigid systems, [EDI users] are willing to dream, but they're looking at their transactions going off into the wild and woolly Internet," said Blane Erwin, an analyst at Forrester. That's where the VANs can step in: "As transaction brokers, they can take on authentication and accountability and help big companies weld the old EDI to the new, sleeker world of the Internet," he said.

At least in terms of basic transmission costs, the economics are sound: With the Internet, you typically pay a flat fee or sliding rate to your Internet provider or piggyback on your company's existing Internet connection.

BY TONY BAER

On the other hand, dedicated links to individual trading partners can cost thousands of dollars. VANs aren't much cheaper. Most charge by EDI transaction length. A typical purchase order costs up to a quarter — roughly the price of a 60-second interstate call. Although volume users can negotiate more favorable terms, costs still mount.

But wait, there's more. Future Internet/EDI offerings may simplify EDI for smaller players so that anyone with a Web browser and an Internet connection can play, Erwin said.

Dan Ferguson, head of the EDI Group Ltd. in Oak Park, Ill., offered one example of how this might work. A company would simply log on to a Web home page and fill out an on-line form. That would invoke a script on the Web server to automatically translate the data into an EDI format that would then be fed into an invoicing or purchase order system.

The VANs are already starting to offer such capabilities. Premenos Corp. is expected to announce products in the first half of this year that fall under its WebEDI umbrella.

Theoretically, Internet/EDI transactions would be much closer to real time. With traditional store-and-forward EDI, delivery time is 12 to 24 hours vs. minutes on the Internet. Electronic Commerce Strategies' Shaw describes one scenario where this would be especially useful: Automotive suppliers whose plants are located so close to their Big Three customers that their trucks often arrive at the loading dock before their advanced shipping notice EDI transactions do.

But there's a good reason why VANs are called "value-added" networks, said Alan Kravitz, who manages TI's EDI processes. "If you're going to do EDI over the Internet, you'd better know what you're doing" because you or your EDI provider will have to rebuild all the

Please turn to next page

IT'S GENE PHIFER AND ALAN KRAVITZ who
hustle to overcome before implementing
EDI over the Internet

VENDORS VIE FOR INTERNET EDI

The prevailing Internet mantras for EDI VAN and software providers has become, "If you can't beat 'em, join 'em." A sampling of strategies is listed below:

GE INFORMATION SERVICES launched Internet@GE, its security software for Internet transactions. GISS also offers "not access to its VAN using a standard Web browser, and its EDI services will be gradually extended (www.gis.com).

HUBBARD CORP.'s TruLink EDI includes a Web site builder, a browser, Internet access and Web site hosting. TruLink handles, too, the same, is managing software that will work with Hubbard's EDI management software to enable trading partners to send EDI transactions via the Internet (www.hubbardcorp.com).

IBM ADVANTAGE plans to offer EDI services over the Internet that support Web, FTP and SFTP services as well as gateway to additional EDI services (www.ibm.com/globalnetwork/).

PREMIER CORP. was first with an Internet security product called TruLink, which incorporates DES and RSA Data public/private key encryption. This summer, Premier provides to provide more information on products under its Web@EDI strategy, which is intended to EDI-enable companies with Internet access and a Web browser (www.premier.com).

STYRLING COMMERCIAL, INC. is expanding the functionality of its Secure Server transaction software by incorporating Internet firewall and encryption capabilities. Starting also offers an Internet gateway to its Commerce Connection network to let customers transmit documents via Commerce Network (www.styrling.com).

Continued from page 35
necessary checks and procedures, he warned.

Particularly security. "For smaller enterprises, your VAN might cost \$300 a megabyte. But if Internet costs \$10 per megabyte, plus an additional \$20,000 to build the firewall, what's your real cost?" said Randy VandenBrink, EDI services manager at Hewlett-Packard Co., which plans to get its feet wet with Internet/EDI within the next year or two.

Plus, the Internet is a public network. What assurance do you have that your transaction won't get switched into some weird place or end up in the wrong hands?

But security is not a showstopper for everyone. At Avex Electronics, Inc. in Huntsville, Ala., the goal is to piggyback on parent company J. M. Huber Corp.'s existing T1 Internet links. Using Premenos' Templar Internet security product, Avex is now conducting an Internet/EDI pilot with one partner and hopes to transition the rest of its 80 trading partners within two years, saving about \$15,000 annually.

"We don't think that any solution will be 100% secure, but we think that the solution will be good enough to outweigh the risks," said Mike Gordoo, manager of electronic commerce.

WHERE THERE'S SMOKE . . .

So while Internet/EDI may be dark and dangerous, several firms, including a few financial institutions, are now conducting pilots or implementing production systems. But cost is not the only incentive: Bank of America in San Francisco is hoping to increase bill-payment services among small and midsize businesses. And Bank One in Columbus, Ohio, is opening a new business, processing subscription payments for a specialized library periodical service.

Bank of America's project involves a six-month pilot with Lawrence Livermore National Laboratory in Livermore, Calif. (see story page 28). Security measures are based on Bank of America's implementation of RSA Data Security, Inc. and data encryption standards. So far, said Bill Jetter, vice president of Bank of America's Global Payments

business unit, no security breaches have been recorded, and most transactions are completed within six minutes. Much of that time is accounted for by negotiating Bank of America's elaborate security procedures.

Of course, the pilot is being conducted with two local trading partners. Jetter conceded that bandwidth and turnaround might be issues if the process were implemented on a larger scale with more widely scattered customers.

Bank One's project involved building what product manager Steve Dieringer termed "a private VAN on the Internet." Along with two partners — an on-line catalog provider and Open Market, Inc., a Cambridge, Mass., developer of Internet transaction-processing software — the bank has been processing subscriptions since last September. However, only order-entry and order-acknowledgment transactions are transmitted — nothing financial.

OPEN VISION

Some believe that the next logical step will be "unsolicited EDI" and that the Internet will be the perfect place for it. The idea of unsolicited EDI, also known as "open EDI," is for any two companies to conduct EDI like two ships passing in the night, said Jeff LeRose, head of EDI consultancy Research Triangle Consultants.

Not everyone buys into that vision, however. Internet/EDI may change the way EDI is processed, but it doesn't mean you'll necessarily start doing business with complete strangers, said Victor Wheatman, a vice president at Gartner Group, Inc. "You'll still need to establish trust and validate data structures before you open a trading relationship," he said.

In fact, the new forms of EDI are really nothing more than new technology. HP's VandenBrink said. The hard part is still changing business processes to do more business electronically. As with traditional EDI, he said, "The significant effort will be how to fit it into your business environment." ■

Here is a freelance writer based in Bedford, Mass.

ADVERTISING SUPPLEMENT

Just Ask Sterling Commerce About the Business of Electronic Commerce.



Why people move to Electronic Commerce varies as much as businesses vary today. For example: A regional grocery store chain no longer carries its own inventory. Instead of purchasing products to put on its shelves, it now "rents" the shelf space to its suppliers, managing the product flow through an electronic just-in-time delivery system linked to its check-out scanners.

A bank adds fee revenues by providing electronic corporate payment services via the Internet to its local merchants and major corporate clients, such as utilities, government agencies and home services businesses, slashing accounts payable/receivable costs for enterprises that deal with thousands or millions of consumer and corporate paper checks each day.

A major PC manufacturer streamlines its supply chain management system by putting all its trading partners, including small suppliers, on-line. Costly paperwork is eliminated, inventory handling charges are slashed, and ordering, manufacturing and shipping processes can be fully automated.

Re-Engineering the Enterprise

In this day and age when we hear so much about "re-engineering the corporation," electronic commerce technology truly promises to change the way that companies of all sizes work. New business processes—from supply chain management to just-in-time manufacturing/delivery and WWW Commerce—are now possible as EC features are being adopted not just within a company but by its small to very large trading partners as well.

At its most basic definition, electronic commerce is the process of doing business electronically. It involves the automation of a variety of business-to-business transactions through reliable and secure connections. Depending on the need, EC involves different technologies and value-added services such as electronic data interchange (EDI), e-mail, electronic funds transfer, electronic forms, file transfer, interoperable database access, messaging, bulletin boards, catalogs and security devices (firewalls, encryption, gateway managers, etc.). Whether standards-based EDI exchanges of purchase orders and shipping notices or Web-based catalogs are used, EC requires a great deal of automation—both at the production application-to-application level as well as the end-user productivity level.

By reducing the clerical workload and eliminating unnecessary paper handling, electronic commerce can ensure rapid, accurate, secure



exchange of time sensitive business information; reduce operating and inventory costs; and improve the speed of ordering, delivering and paying for goods and services. Companies can now implement key strategies such as quick response, EC data warehousing, just-in-time manufacturing/delivery, vendor-managed inventory, supply chain management, and

Internet marketing programs. These competitive advantages account for the 25-35% annual growth rate for the electronic commerce industry.

Many companies dabble in EC or provide just one technology, such as EDI software, that addresses a small portion of the EC business needs. Sterling Commerce is the only company currently providing a comprehensive suite of robust software and value-added services that enables the expanding role of electronic commerce in business and government.

Sterling has provided EC and EDI solutions for more than 20 years, and counts among its 17,000 customers 96 of the 100 largest U.S. industrial companies (as ranked by *Fortune Magazine*) and 99 of the top 100 U.S. commercial banks (as ranked by deposits by *American Banker*). Since Sterling Commerce already provides more than 70 software and service products, it is widely regarded as the global leader in EC. It offers a virtual "one-stop shop" for financial EDI and electronic payment software; network access and value-added EC services; EC translation, mapping and messaging software; and advanced information networking infrastructure capabilities, such as file transfer, database/application integration, and security management software.

Moving Beyond Four Walls

Electronic commerce has spawned the need to manage an "extended enterprise" operation, one that not only includes a firm's various divisions, sites and offices, but also involves close partnering relationships with customers, suppliers, banks and other trading partners. According to Warner Blow, President of Sterling Commerce, the key to successful EC is business operations first, technology second.

"EC is many things," Blow says. "It's EDI. And it's the Internet plus supply chain management. One of these things alone is very important, but none of these alone encompasses the breadth of Electronic Commerce. Each is individually important, and if you put them together—combining operational needs with the various applications, databases, networks and hardware platforms needed to affect bottom line objectives—that's when you have EC."

**Sterling
counts
among its
17,000
customers
99 out of the
top 100 U.S.
commercial
banks.**

Sterling has been a pioneer in electronic commerce over the Internet, automated supply chain management, financial EDI and information networking. Blow adds. To continue to be the leader in EC, Sterling Commerce has organized its operations around today's four major EC solution areas—Banking Systems and the VECTOR software family; Communications Software through the CONNECT product family; Interchange Software, which distributes the GENTRAN product family; and Network Services through the COMMERCE suite of software and services.

Electronic Commerce Niches

Although VECTOR is a check-processing staple for thousands of U.S. banks' back room item processing operations, it is also the dominant front-line software for financial EDI (or FEDI). FEDI is in its infancy, but is expected to grow dramatically over the next three years as



more corporations demand that their banks support integrated electronic payments. Within the payment arena, Sterling Commerce plans to be at the forefront of this move as well as other emerging technologies, such as the use of the Internet for corporate payments.

Much of today's electronic commerce challenge is based on providing an extended enterprise communications infrastructure. For Sterling Commerce, this is provided through the CONNECT family of software. CONNECT supports applications integration and information management, regardless of hardware, software, database, and network technologies. CONNECT dominates 46 percent of its current market, and is increasing its support of hot EC needs such as:

- Intra-networking and Web-centric computing
- Internet gateway and EC document security
- Data access and data warehousing
- Business process re-engineering

Sterling has been a pioneer in electronic commerce over the Internet, automated supply chain management, financial EDI and information networking. Blom adds: "In continue to be the leaders in EC, Sterling Commerce has organized its operations around today's four major EC solution areas: Banking Systems and the V.I.C. FOR software family. Communications Software through the CONNECT product family, Interchange Software, which distributes the G.I.N.T.R.A.N. product family, and Network Services through the COMWIRE suite of software and services."

Electronic Commerce Niches

Although V.I.C. FOR is a check-processing staple for thousands of U.S. banks' back room item processing operations, it is also the dominant front-line software for financial EDI for FDI. FDI is in its infancy, but is expected to grow dramatically over the next three years as



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At the heart of today's electronic commerce challenges is based on providing an extended enterprise communications infrastructure. For Sterling Commerce, this is provided through the CONNECT family of software. CONNECT supports applications integration and information management, regardless of hardware, software, database, and network technologies. CONNECT

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 - Data access and data warehousing
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PIONEERING COMMERCE ON THE INTERNET

As Internet hosts across the globe number in the tens of thousands and use a new commercial web site opens every seven minutes, there is no doubt that the Internet and the World Wide Web are driving forces in expanding electronic commerce.

"The real advantage of the Internet is that it makes electronic commerce real for more people. They can replace phones, faxes and the mail with e-mail or have easier access to trading partner information, goods and forms through the World Wide Web," says Clark Woodford, Vice President of Business Development for Sterling Commerce. "But companies are just now figuring out how to make these end-user support tools actually roll into an all-day, highly automated production EC environment."

Most corporations are just discovering the Internet, but Sterling is a recognized pioneer for doing business electronically via the Internet. It has helped manage the government parent of today's commercial Internet. It built one of the first commercial Internet home pages. It is a key player in numerous top management, such as USNET, and manages home pages for NASA and the White House. And the Internet plays a key role in Sterling's internal communications—three years ago, it chose the Internet as its global backbone for e-mail communications,

quickly offsetting millions in communications and infrastructure costs. Today, sales, support and product development operations in more than 70 countries are linked via the Internet.

In 1995, Sterling began supplying commercial products for other companies interested in using the Internet for electronic commerce. Its first foray was to launch an enterprise gateway manager and security product called CONNECT.Firewall. Sterling Commerce is currently expanding its security offerings to management of multiple encryption standards.

In addition, Sterling Commerce has packaged products to help companies take the greatest advantage of the Internet. For example, Sterling's EC Gateway for the Internet combines secure Internet EC with GENTRAN:Server, to better manage the flow of standard EDI and non-standard EC documents.

To help companies quickly adopt the Internet, Sterling's COMMERCE:Network provides a "fast path to the Internet." Through its Internet-enabled COMMERCE:Connection suite of Windows-based software, more than 12,000 trading partners can now communicate via the Internet or other public or private networks.

But one of the hottest areas for Sterling Commerce is the support of

the Internet Electronic Marketplace. Through COMMERCE:Connection, retail storefronts can now be linked electronically with back office electronic commerce operations. In addition to supporting a mixed bag of network access, from the Internet to SNA to dial-up asynchronous communications via PCs, Sterling Commerce plans to soon offer home page services specifically for the electronic commerce market.

The Net and the Web have already proven to be the top place for partnering to capitalize on the strengths of different companies. Sterling Commerce has announced key partnerships and working product offerings in conjunction with organizations like CommerceNet (a non-profit consortium of companies formed to facilitate the use of Internet-based infrastructure for electronic commerce), VISA, SAP, Hewlett-Packard, Microsoft, Open Market, and others.

"We already offer more products for production-system EC over the Internet than anyone else," Woodford adds. "We plan to stay on top by focusing first on automation in processes that don't require human intervention. At the same time we'll deliver end-to-end products for the areas people must be directly involved. You can bet if it involves EC, we'll be there, and we'll be there first."

Business process re-engineering is also a major growth sector for the Interchange Software Group (ISG), since it focuses on electronic commerce software for EDI and transaction mapping of business applications.

The market-leading GLNTRN product family, which now has 12.5 percent share of its market (though, that of its nearest package), offers a complete turn-key solution for companies with large-scale EC needs. 21 DI EDI Complete for companies needing flexible service and software packages to get started in EDI or 14.1 5114 Develop solutions that are pre-packaged, push-button EDI enablers for firms to work easily with smaller trading partners.

Value-Added Network Solutions

Sterling Commerce's Network Services Group is a worldwide provider of value-added electronic commerce network solutions for health care, pharmaceutical, handling, grocery, retail, trade, transportation, manufacturing and other industries. The COMMERCE



software and service product family supports 21 different network-related capabilities and 45+ discrete value-added services. It is easily accessible from anywhere in North America and is expanding globally, from Australia to unique to South America and elsewhere. The focus of the COMMERCE product family is a suite of value-added services that expands the scope of trading

partner relationships. These value-added services also enable small trading partners to utilize electronic commerce through the Internet, while bridging the gap between electronic marketplace (the sale of goods to consumers electronically) and Electronic Commerce (business to business requirements).

"Just ask one of our customers why they needed EC," says Bloor. "Then ask them why they chose Sterling. In both cases, the answer is usually simple—their customers, investors and bottom line measurements demand more. So they need more than one solution, one answer from their EC vendor. We plan to keep right on delivering more by partnering with our clients, even as the questions get tougher and tougher." ■

HOW TO GET YOUR COMPANY TO BE PROACTIVE WITH EC

What does it mean for a company to be proactive and progressive in electronic commerce (EC)? What does EC mean to your business? Here are seven questions that serve as food for thought for any manager or company looking to reap maximum rewards from the technology:

1. What is your EC strategy? Surprisingly, few companies possess a written plan for EC. Ideally, this plan should come from senior management, or have the support of company leaders. And like any other business plan, it should have periodic, measurable goals and should be reviewed, evaluated and updated regularly.

2. Do you have an EC manager? Organizations that have the greatest success in EC are often those with a dedicated EC director or manager with an adequate, well-trained EC staff. If the EC manager has a technology background, he or she should meet frequently with members of the functional departments that EC serves; and if he or she comes from a business background, regular consultation with technical personnel is essential.

3. Do you have an EC committee? In addition to an EC manager and staff,

a proactive company will have an EC committee. This committee should include representatives of the IS department as well as the departments that EC serves. Regularly-scheduled meetings should be specified in the EC strategy.

EC technology is changing rapidly. As new technologies and tools are developed and introduced, a company should have a specific methodology for investigating and evaluating them, and for making implementation decisions.

Is your company reactive, using EDI with a "receive, rip, read and react" approach? Or is it proactive, integrating all types of data into its internal business applications? Proactive companies use EC throughout the business, going beyond the purchasing function to sales, payments, customer service, accounting, inventory management, warehousing, etc. They also can gather EC data to assist with forecasting, planning and marketing decisions.

6. How does your company use EC externally?

One of the best ways to leverage your EC investment is to expand external usage. EC can be extended all along the supply chain, from raw materials supplier to end consumer. Logistics is a valuable area for EC implementation—EDI and bar coding can be combined to aid in shipment tracking and cargo handling and delivery, for example. Some companies are closing the EC purchasing loop by implementing financial EDI and electronic payments. Businesses are also moving EC into their Human Resources departments, utilizing EDI to communicate data related to insurance, pension plans and other benefits.

What should you do next?

The best place to begin any EC program is with senior management. Executive support, commitment, understanding, and involvement are vital to successful EC implementation. Once this is accomplished, evaluate your business processes and procedures to determine if they can be improved via EC. Systems re-engineering for EC is also beneficial, particularly if you are installing new EC-related software, or migrating EC-related applications to a new platform.

Business process re-engineering is also a major growth area for the Interchange Software Group (ISG), since it focuses on electronic commerce software for EDI and translation/mapping of messaged applications. The market-leading GENTRAN product family, which today has a 23 percent share of its market (double that of its nearest packaged software competitor), addresses three distinct market needs: 1) EC messaging gateways for companies with large-scale EC needs; 2) EDI Complete for companies needing flexible service and software packages to get started in EDI or EC; 3) EC Desktop solutions that are pre-packaged, push-button EDI enablers for hubs to work easily with smaller trading partners.

Value-Added Network Solutions

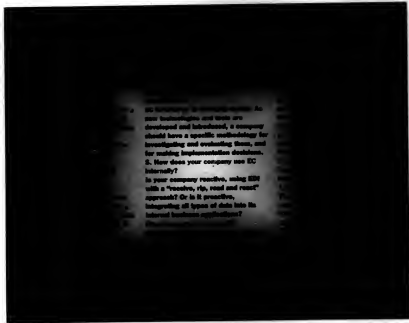
Sterling Commerce's Network Services Group is a worldwide provider of value-added electronic commerce network solutions for healthcare, pharmaceutical, hardlines, grocery, retail, trade, transportation, manufacturing and other industries. The COMMERCE



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COMMENTARY: ROI

The Internet Empire: Caveat Emptor

BY SUSAN COHEN

In 1995, we heard relentless hype about the Internet, buying on-line and Bill Gates.

The electronic economy was supposed to take hold within the year. Corporate America's knee-jerk reaction was felt 'round the Web as commercial sites exploded from 1,700 in 1994 to almost 20,000 in 1995, according to Web server provider Open Market, Inc.

So in 1996, is anyone turning a profit selling goods or services on-line?

In a word, no. There is not a single large company that has created a profitable electronic consumer channel. International Data Corp. expects 20% of Fortune 1,000 commercial sites to be abandoned in 1996. Why? Because security concerns and ease-of-use issues are keeping consumers away in droves.

Liability limits protect us from being taken to the cleaners when bad guys get our credit cards, but there is no such protection on-line.... yet. Security blan-

Despite all the World Wide Web hype, organizations have much to learn about reaping returns

kets promised by the MasterCard/Visa consortium and others are still one year away. Real-world Netscape bugs, Web snafus and the highly publicized arrest of hacker Kevin Mitnick amplify Jane Doe's concerns about buying on-line.

Home-based technology must also get easier to use. Compare home PCs with another consumer shopping channel: the telephone. Today's PCs and the Internet can't compete. Desktops are stashed away in the office or the den. Even those fluent with <http://www> syntax get lost. Bottom line: It's easier to order a pizza over the phone than to boot the PC, launch the browser, log onto Pizza.Net and order the pie.

So what should a company do if it doesn't want to be left behind in the electronic economy? My advice: Wait, watch and learn.

WAIT. Companies have nothing to lose by biding their time before jumping into electronic commerce. In cyberspace, there is always room for one more. If you already have a Web site, limit Web spending to basic updates until you establish concrete measures of expected return. Electronic commerce metrics should quantify the costs of customer acquisition, sales execution and after-sales support. To calculate an accurate ROI, be sure to distinguish between revenue

increases due to new customers and those due to customers switching from other sales channels.

WATCH. Don't be blindsided by competitors. More than any other business environment, the Web and the Internet offer companies an unprecedented opportunity to eavesdrop on rivals. At a minimum, your adversary's marketing posture and deal structure will be displayed in all its multimedia glory.

LEARN. Cybermarketing smarts are the single most important skill your company needs to succeed. This requires breaking down the walls between Sales & Marketing and IS. Together, marketers and technologists must create flexible deals and eye-catching Web pages. Turn the 'net denizens loose defining your external network policies and architecture.

As for me, I'm a typical consumer. Until my credit card is safe and intelligent agents make finding what I want easier, count me out. ☐

Cohen is president of The Aurora Group, a Manhattan, N.Y.-based client-server education and consulting firm. She can be reached at (647) 639-1394.



READING LIST

9 *Internet Demographics Survey*, Oct. 30, 1995
ComscoreNet/Pittman, Menlo Park, Calif.
415 (617) 4790 or E-mail info@comscore.net

9 *"Electronic Commerce: Trends and Opportunities"* by Linda M. Applegate, Harvard Business School, and Janet Gagan, Bentley College, Harvard Business School Case #9-195-005, Oct. 6, 1995 (900) 545-7685

9 *"Paving the Information Superhighway: Introduction to the Internet"* by Linda M. Applegate, Harvard Business School, and Janet Gagan, Bentley College, Harvard Business School Case #9-195-002, Oct. 6, 1995 (900) 545-7685

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PHOTOGRAPH BY JACK FELLEY COLORIZING BY BETSY RATES

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LEGAL THREADS

'Net Legalities Loom Large

In addition to **BANDWIDTH** and
NETWORKS, companies embarking
on the **ELECTRONIC** commerce trail
have the **LAW** to deal with

AS WE ENTER THE ERA of doing business on the Internet, the legal ramifications of such transactions are undergoing scrutiny. While the legalities of doing business face-to-face or via catalogs have been firmly established, the Web's advent has made legal issues such as who is responsible for mistakes and authentication key concerns for 'net pioneers.

In an attempt to shed some light on a few of the issues surrounding electronic commerce, we went straight to the source—the legal professionals who are entrenched in these disputes daily.

The following is a discourse by two legal minds on the contentious issues of policing the Internet, Internet boundaries and whether our judicial system can handle electronic commerce.



LANCE ROSE ESQ. is the author of "NetLaw," an on-line service and Internet legal guide, and an attorney at Lewis

and Rose LLP in Phoenix.



DAVID W. PHILLIPS is associate general counsel for America Online, Inc., principally responsible for intellectual property, privacy and information law matters. He is also co-chair of the American Bar Association's new Subcommittee on Interactive Services.

Can the Internet be policed?

ROSE: The Internet can and will be policed, though not perfectly. Just like in physical cities and neighborhoods, cybercops can't be everywhere, but they will cut down on crime just by walking (or perhaps surfing) the beat in on-line neighborhoods. However, many on-line areas, such as BBSs and large on-line services like America Online and Prodigy, are private. It's not really up to government or the police to maintain order in these private places. On the other hand, the Internet and World Wide Web are very much public places, and it makes sense to find police there.

Just who are the "police" on-line? So far, it seems like everyone wants to get in on the act. Sure, the Postal Service made its play. However, we have also seen on-line police activities by the Secret Service, the FBI, U.S. Customs, the Federal Trade Commission and various state police forces, to name just a few.

The states have also been very active. There was even a Web page in which the Attorney General of Minnesota declared that if anything on the 'net was illegal in Minnesota, it could be prosecuted in Minnesota. Globally, we are also now seeing things like the recent rumblings in Germany about censoring Usenet newsgroups with sexual content or Nazi imagery and declarations by the Chinese government that all 'net connections to the world must be through conduits approved or controlled by the gov-

ernment. In short, the 'net is filling up with plenty of police of all kinds.

PHILLIPS: I agree that, just like in the physical world, a variety of federal, state and foreign government agencies and organizations will police cyberspace. "Netizens" and commercial stakeholders of the 'net welcome responsible government policing that will safeguard users and impose the security necessary to conduct commerce over the 'net.

However, government agencies must not impose burdensome regulations that ignore both the fundamental differences of this medium and constitutional rights. For example, the recently enacted Communications Decency Act extended in procrustean fashion telephone regulations to cyberspace. By blindly disregarding basic differences between telephone calls and computer network exchanges, the Act undermines core First Amendment free speech rights.

While I agree that foreign governments are now reacting to what they perceive as threats caused by unrestricted access to the Internet, the 'net is premised on a routing system that treats localized blocks as system failures and provides for rerouting data around government censorship gates. Yet if allowed, certain governments will continue to attempt to control it. International standards must be developed to harmonize regulation of the 'net and coordinate regulatory actions.

Just like in the physical world, policing requires cooperation and coordination from private communities. The communities that make up the 'net have a stake in patrolling their virtual neighborhoods. In fact, they are in the best position to do so by reporting illegal activities and deterring harmful conduct.

The Internet has no borders, so how are things such as tax laws and interstate commerce laws analyzed and/or should they be?

PHILLIPS: Networked communities not only challenge the notion of federalism in the U.S. but also the very idea that any one nation state can rationally or effectively regulate network activities in

isolation. In the early days of our republic, the imposition of a myriad of state laws threatened to choke burgeoning interstate commerce. Similarly, regulation of interstate and international transmission of content, communications and commerce over digital networks threatens to undermine developing commerce over global networks.

Like international laws regulating global waters or airspace, international solutions must be adopted to provide the necessary infrastructure to allow the free exchange of information, goods and services under a common set of rules.

Like the effort to establish firm international trading rules, the emerging commercial stakeholders of the 'net must organize to prevent local and national governments from imposing inconsistent and irrational regulation of cyberspace. The creation of global standards for the regulation of cyberspace will be an evolutionary process. This process will be hastened if commercial stakeholders of the 'net can effectively convince their national governments that the piecemeal imposition of regulation will undermine an essential tool for global and national economic growth and job creation.

NOTE: Nations and states may not have as much power as they're accustomed to in the on-line world, but they will certainly wield their existing, traditional physical powers any way they can. They will continue to view their mission as protecting those who live in their geographic boundaries. From that perspective, "cyberspace" is just a fiction shared by in-state citizens sitting like couch potatoes in front of their computers. If something disfavored by a state in the U.S. happens on-line, such as illegal gambling operated on the Web from off-shore computers, the state will exercise whatever power it has to shut it down and protect that state's citizens.

States will probably also end up seek-

ing to attach identity stickers of some sort to users. Think of this as the flip side to digital signatures. Leaving aside the Orwellian privacy implications, this leads to a fascinating thought: State and national borders may arise in cyberspace, not in the form of geographic outlines but as signs of nationality stamped on each user's digital persona. If a user's home state does not allow access to certain on-line areas or activities, the nationality sticker on his or her virtual forehead will interact with the local on-line system software to keep him away from the forbidden places.

A separate question is whether we need the same kinds of government regulation on computer networks as we have had traditionally in the physical realm. For instance, national governments are needed to create a physical transport and trading environment organized enough for physical commerce to thrive. Do we need this sort of government help on-line? Or can companies on the 'net, with its cheap and easy information flow, organize their own trading and transport environments economically without government involvement? The 'net may offer a new, true opportunity for realistic government shrinkage if the politicians will allow it.

Has the judicial system evolved enough to handle electronic commerce-related contractual disputes?

NOTE: We routinely make deals over the phone with people we've never met. For some reason, though, contracts on the Internet make many of us far more nervous than telephones ever did. People today are just plain apprehensive about Internet transactions, despite the fact that our current laws are open-ended enough to handle on-line contracts without much problem. Luckily, the forces of on-line commerce are rapidly turning this into a nonissue. Companies such as VeriSign and others are now rolling out "digital

certificates," which will enable us to verify the identities of those with whom we wish to deal. In addition, we are starting to see legislation that seeks to set up standards for acceptability of digital signatures and the like. In any event, if digital certificates and other on-line certification methods become common in the future, regardless of whether we needed them in the first place, then we may all be forced to use those methods if we want our own on-line contracts to be considered valid.

PHILLIPS: With the increasing widespread adoption of digital networks, current requirements for written signatures or written authorization under many statutes and regulatory schemes make little sense. To ensure that laws do not thwart the development of electronic commerce, judges should apply current statutes in ways that give effect to their underlying purpose rather than to formal requirements. If not, the law will bear little resemblance to commercial practices.

It's commonplace in the U.S. to order goods through catalogs using a credit card. Is oral authorization the equivalent of a written signature? Are such orders binding even if the process is susceptible to fraud? The catalog and credit-card companies deal with such risks and contingencies as a cost of doing business. Internet merchants and providers will do the same. Nevertheless, there is a real need to create legal standards governing electronic transactions.

The manufacturing community embraced electronic data interchange only after the necessary legal infrastructure was built. Today's on-line merchants and providers must build a similar infrastructure that will provide the foundation necessary to transact and do business over digital networks. ■





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PREDICTIONS

BANKING

In the age of electronic commerce, banking is becoming more self-service-oriented. As people get used to doing things themselves, how will banks bring in revenue?



"Banks need to move their product offerings into higher value-added territory: investment products, asset management and financial planning. Technology can help, integrating personal service with automated channels. While banking on-line, customers using interactive financial profiling tools could be directed to bank financial consultants for more information about products. Bank Web sites could create awareness and generate comfort with new financial products that traditional customers might not be familiar with." — Larry Jon, vice president of elec-

tronic commerce, Liberty Financial Co., Boston (based on research done at Forrester Research, Inc., Cambridge, Mass.)

TELECOM

New that carriers are hosts for Web-based services to allow electronic commerce, will they step in and do it for small companies that can't/won't do this for themselves?



"All major carriers now offer managed network services. These programs are targeted at two markets: the middle-market customer that wants to focus on its core business and doesn't have the resources to manage its WAN and the very large corporations that have/are growing global networks for data resources and know how complicated this is and want to outsource. All carriers exceeded their expectations in their business plans over the last three years and see this

business growing with frame-relay sales." — Christine Hechart, director of broadband consulting, Telechoice, Inc., Verona, N.J.

MEDIA CONVERGENCE

Do you see a convergence of all different kinds of media as that we will one day see Internet service come on over the TV?

"When it comes to appliances, I do see them merging. Already computer hardware is capable of getting full-motion video onto the screen, so the boundary between the computer and the TV is blurring.

"In fact, you should not have to think about what channels or technology are used [for communication]. You should just ask your appliance for something, and it will see to it without you being aware of the technology it is using. And let's face it, that appliance will be a computer (not a TV)." — Tim Berners-Lee, World Wide Web Consortium, MIT, Cambridge, Mass.

Milestones



MARCH 1996

The World Wide Web is born at the CERN physics lab in Geneva to help physicists around the world collaborate on research projects.

APRIL 1996

Netscape Communications Corp., developer of the most popular 'net browser in use today, is formed. Communications, a Menlo Park, Calif.,

based consortium that promotes business on the Internet, is also formed.

FALL 1994

Oracle Corp. begins to sell Personal Oracle7 and PowerObjects via its Web site.

MAY 1996

The Big Three long-distance carriers as well as several Bell operating companies make plans to reserve portions of their public networks as the Internet for secure electronic transactions.

JULY 1996

The U.S. Postal Service and Protonet Corp. test digital signatures for authenticating EDI users over the Internet. The Postal Service hopes to become the EDI industry's national certification authority.

AUGUST 1996

A student at France's Ecole Polytechnique creates the encryption software in the 40-bit version of Netscape's Navigator browser. Netscape blames the problem on the government's prohibition against exporting the

128-bit version. Pending legislation will ease the problem, according to experts.

SEPTEMBER 1996

Protonet announces Tompa for Windows, the first security solution for business-to-business EDI over the Internet.



SEPTEMBER 1996

AT&T Corp., Sun & Broadstreet Corp., General Electric Co. and the U.S. Chamber of Commerce announce an online service to allow businesses to line up

suppliers, negotiate contracts, conduct bidding and arrange for delivery worldwide.

OCTOBER 1996

BankAmerica Corp. and the Lawrence Livermore National Laboratory successfully test secure payment requests for the federal government. The test uses both digital signatures and public key encryption.

FEBRUARY 1996

MasterCard and Visa send faxes to promote a single-payment method for Web-based electronic commerce.





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